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THE AUTOMOBILE TRADE DIRECTORY

AUTOMOBILE
MOTOR TRUCK
TRACTOR

*A Condensed Catalog
of the
Automotive Industries*

AIRCRAFT
MOTORCYCLE
MOTOR BOAT

PUBLISHED
QUARTERLY

OCTOBER, 1921

129 W. 39th ST.
NEW YORK

Motor Wheel PRODUCTS



Wood Wheels
for Automobiles and Trucks

Metal Stampings
Steel Products

Gier Tuarc Steel Wheels

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Lansing, Michigan

STANDARD BRAZED STEEL TUBING

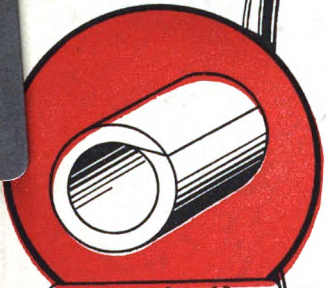
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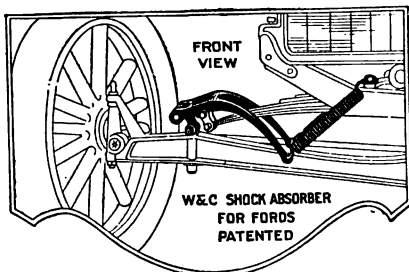
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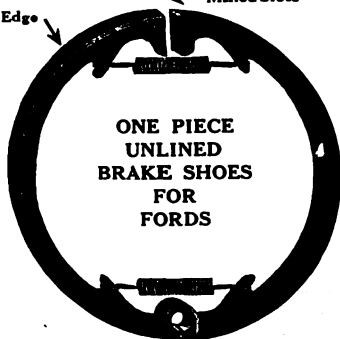
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DETERMINE the correct section from the opposite page.

In Section 1 you will find the subject matter grouped as follows:—
Automobiles, Commercial Vehicles and Tractors.

In Section 2 you will find the names of products arranged in their regular alphabetical order under the noun.

The numerous cross references throughout the book remove any doubt as to the correct noun.

In Section 3 you will find everything covered by a complete index on Pages 969 and 970.

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		Perfection Windshield Co.	757
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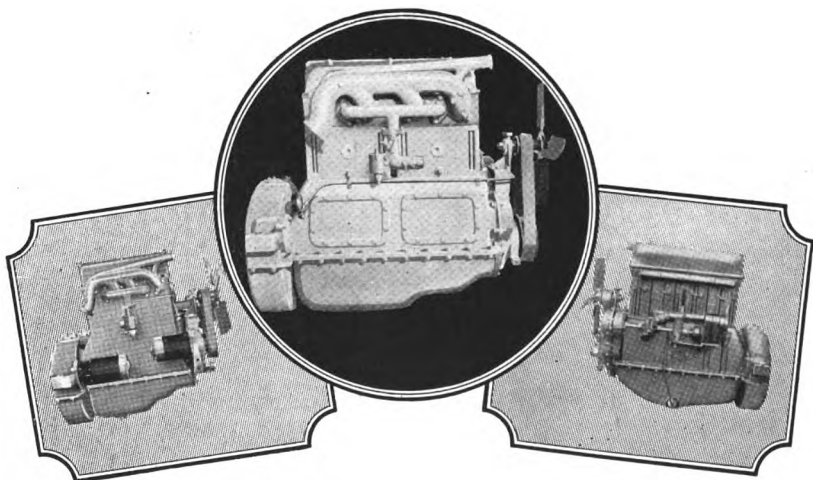
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SECTION I

Automobiles, Commercial Vehicles
and Tractors.

BRIEF specifications of stock models. Names and addresses of manufacturers.





Model 408-3 $\frac{1}{8}$ x 5"

Model 400-4 $\frac{1}{8}$ x 6"

Model 402-4 $\frac{1}{8}$ x 5 $\frac{1}{4}$ "

Forget Bore and Stroke and Buy Engines That Sell on Performance

Study This Record of Midwest Engine Performance

Model 408 4 Cyl. 3 $\frac{1}{8}$ x 5"			Model 400 4 Cyl. 4 $\frac{1}{8}$ x 6"			Model 402 4 Cyl. 4 $\frac{1}{8}$ x 5 $\frac{1}{4}$ "		
R.P.M.	H.P.	Torque	R.P.M.	H.P.	Torque	R.P.M.	H.P.	Torque
500	11	116 lbs. ft.	400	17.5	233 lbs. ft.	400	13	171 lbs. ft.
600	13.5	118 lbs. ft.	600	28.5	249 lbs. ft.	600	20.5	179 lbs. ft.
800	19	125 lbs. ft.	800	37.5	246 lbs. ft.	800	27.5	181 lbs. ft.
1000	25	131 lbs. ft.	1000	46	243 lbs. ft.	1000	34	179 lbs. ft.
1200	29	127.5 lbs. ft.	1200	53	234 lbs. ft.	1200	40	175 lbs. ft.
1400	33	124 lbs. ft.	1400	59	222 lbs. ft.	1400	45	169 lbs. ft.
1600	36	118 lbs. ft.	1500	61	213 lbs. ft.	---	---	---
1800	39	114 lbs. ft.	1600	---	---	1600	47.5	156 lbs. ft.
			1800	---	---			

In addition to unusual performance at low speed, all Midwest Engines are guaranteed for full load and constant service up to 1500 ft. piston speed per minute. This is possible due to the lubricating system (which is patented and can be secured in no other engine) and the extreme size of the crankshaft—preventing bearings from "going out of round". High compression—big valves and valve lifts with high intake velocities and correct scavenging result in more power and torque on less fuel than any other engine we know of.

MIDWEST ENGINE COMPANY :: Indianapolis, U.S.A.

MIDWEST

TRUCK and TRACTOR ENGINE

SECTION I

Automobiles, Commercial Vehicles and Tractors

Gasoline Automobiles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Ace	Apex Motor Corp., Ypsilanti, Mich. Touring.....\$2280 Roadster.....2260	6-3¼x5	Herschell-Spill	25.3	116	32x4
Allen 13	Allen Motor Co., 400 Dublin Ave., Columbus, Ohio Roadster.....1195 Touring.....1195 Roadster Artercraft.....1495 Touring Artercraft.....1595 Sedan.....1845	4-3½x5	Own	19.6	110	32x4
Ambassador R See page 19	Yellow Cab Mfg. Co., Chicago, Ill. Two-Passenger Roadster.....\$4500 Four-Passenger Sport.....4500 Seven-Passenger Touring.....6500 Seven-Passenger Sedan.....6500	6-3½x5¼	Continental	31.5	136	32x4½ 33x5
American C 6-60	American Motors Corp., Plainfield, N. J. Five-Passenger Touring.....\$2195 Four-Passenger Sport.....2350 Seven-Passenger Touring.....2275 Two-Passenger Roadster.....2195 Seven-Passenger Sedan.....3150	6-3¼x5	Herschell-Spill	25.3	127	32x4 33x4½
Anderson 20 A-B-C-D-E-F-G-H	Anderson Motor Co., Rock Hill, S. C. Seven-Passenger Touring.....\$1845 Four-Passenger Coupe.....2795 Five-Passenger Touring.....1795 Convertible Roadster.....1795 Five-Passenger Sedan.....2795 Two-Passenger Speedster.....2195 Four-Passenger Sport.....1845 Four-Passenger Ultra Sport.....2395	6-3¼x4½	Continental	25.3	120	33x4
Apperson 8-21	Apperson Bros. Automobile Co., Kokomo, Ind. Seven-Passenger Standard.....\$3500 Four-Passenger Standard.....3500 Seven-Passenger Standard Sedan.....4500 Four-Passenger Standard Sedanette.....4500 Seven-Passenger Anniversary.....4250 Four-Passenger Anniversary.....4250	8-3¼x5	Own	33.8	130	34x4½
Auburn Beauty Six 6-51 See page 23	Apex Motor Corp.—See Ace. Auburn Automobile Co., Auburn, Ind. Five-Passenger Touring..... Seven-Passenger Touring..... Two-Passenger Roadster..... Five-Passenger Sedan..... Seven-Passenger Sedan..... Four-Passenger Coupe..... Four-Passenger Sport.....	6-3¼x4½	Continental	25.3	121	32x4
Austin	Austin Automobile Co., 114-18 Division Ave., S. E., Grand Rapids, Mich. Touring.....\$4250 Roadster.....4250 Sedan.....5500 Limousine.....5750	12-2½x5	Weidely	39.6	142	34x4½
Beggs 20 T. S. C-SE.	Barley Motor Car Co.—See Roamer. Beggs Motor Car Co., Michigan & Guinotti Ave., Kansas City, Mo. Five-Passenger Touring.....\$1775 Four-Passenger Sport.....1995 Four-Passenger Coupe.....2675 Sedan.....2775	6-3¼x4½	Continental	25.3	120	33x4

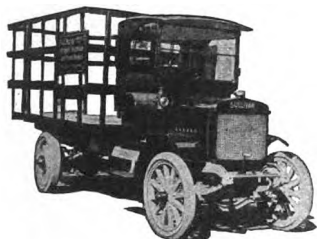
Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Bell 18	Bell Motor Car Co., Central St. and P. R. R., York, Pa. Five-Passenger Touring.....\$1495	4-3½x5	Herschell-Spill	19.6	114	31x4
Biddle B 1-5	Biddle-Grane Motor Car Co., 142nd St. & Harlem River, New York, N. Y. Three-Passenger Roadster.....\$475 Four-Passenger Touring.....\$475 Coupe, Sedan.....\$475 Limousine.....\$650 Collapsible Brougham.....6000	4 3½x5½	Buda	22.5	121	32x4
Birch 30	Birch Motor Cars, 308 N. Michigan Ave., Chicago, Ill. Five-Passenger Touring.....\$995 Two-Passenger Roadster.....995	4-3½x4½	Le Roi	15.6	108	30x3½
Birch 66	Birch Motor Cars, 308 N. Michigan Ave., Chicago Ill. Five-Passenger Touring.....\$1395 Seven-Passenger Sedan.....1995 Four-Passenger Sport.....1445 Three-Passenger Roadster.....1395	6-3½x5	Herschell-Spill	25.3	117	33x4
Birch 44	Birch Motor Cars, 308 N. Michigan Ave., Chicago Ill. Five-Passenger Touring.....\$1195 Three-Passenger Roadster.....1195 Four-Passenger Sport.....1245 Seven-Passenger Sedan.....1795	4-3½x5	Herschell-Spill	19.6	117	33x4
Brewster Knight 91	Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y. Runabout.....\$7900 Limousine.....10600 Brougham.....10500 Landulet.....10700 Enclosed Drive.....10500 Cabriolet.....10800	4-4 x5½	Own	25.6	125	34x5½
Brook	Spacke Machine & Tool Co., Indianapolis, Ind Two Passenger Runabout.....\$425	2-3½x3½	Own	9.8	90	28x3
Buick 44-45-46-47 48-49-50	Buick Motor Co., Hamilton Ave., Flint, Mich. Three-Passenger Roadster.....\$1495 Five-Passenger Touring.....1525 Three-Passenger Coupe.....2135 Five-Passenger Sedan.....2435 Seven-Passenger Touring.....1735 Seven-Passenger Sedan.....2635 Four-Passenger Coupe.....2325	6-3½x4½	Own	27.3	118	33x4
Buick 4	Buick Motor Co., Hamilton Ave., Flint, Mich. Five-Passenger Touring.....\$975 Two-Passenger Roadster.....935 Five-Passenger Sedan.....1650 Three-Passenger Coupe.....1475	4-3½x4½	Own	18.2	109	31x4
Cadillac 59	Cadillac Motor Car Co., 2860 Clark St., Detroit, Mich. Roadster.....\$3790 Phaeton.....3790 Victoria.....4540 Sedan.....4950 Town Brougham.....5290 Limousine.....5290 Seven-Passenger Touring.....3940 Imperial Limousine.....5390 Suburban.....5190	8-3½x5½	Own	31.2	125	34x4½
Case	Case, T. M., Co., J. I., State & Douglas Sts., Racine, Wis. Touring.....\$2250 Sport.....2250 Coupe.....2900 Sedan.....3285	6-3½x5½	Continental	29.4	126	34x4½
Chalmers 35 C, 35 B See Page 25	Maxwell Motor Sales Corp., Detroit, Mich. Five-Passenger Touring.....\$1545 Sport.....1695 Roadster.....1495 Four-Passenger Coupe.....2295 Sedan.....2445 Seven-Passenger Touring.....1795	6-3½x4½	Own	25.3	117	32x4
					122	33x4½

Please mention The Automobile Trade Directory

Sullivan Motor Trucks 1½-2¾ Ton All Models Worm Driven



Highest Grade Units Used Throughout

Rolls Motor	Timken Worm Drive Rear
Rolls Magneto	Timken Axle
Timken Front Axle	Brown-Lipe Transmission
Rolls Steering Gear	Brown-Lipe Clutch
Stromberg	Cadwiler

Dealers invited to write for our proposition.

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TRUCK CORP.**
ROCHESTER NEW YORK

JORDAN MOTOR CARS

JORDAN CARS
contain more of
the complete standard
specifications of the
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Engineers than any
other car in the world
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Cleveland, Ohio



ROAMER

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Price \$2485
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An average reduction of \$800 on
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The remarkable reduction in Roamer price
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We have numerous opportunities for repre-
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Mark the Prosperity of Essex Dealers

The profits that reward Essex
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Gasoline Automobiles—(Continued)

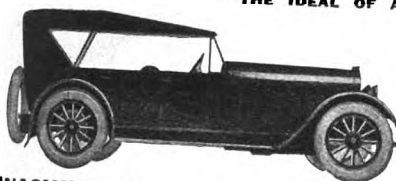
Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Champion Special 1920	Champion Motors Corp., Harrison Bldg., Phila- delphia, Pa.	4-3½x5	Herschell-Spill Lycorning	19.6	118 113	32x4 32x3½
	Five-Passenger Touring \$1295					
	Five-Passenger Tourist 1050					
Chandler New Series	Chandler Motor Car Co., Cleveland, Ohio	6-3½x5	Own	29.4	123	33x4
	Seven-Passenger Touring \$1785					
	Chassis 1585					
	Two-Passenger Roadster 1785					
	Chummy Roadster 1785					
	Four Passenger Dispatch 1865					
	Four Passenger Coupe 2785					34x4½
	Seven-Passenger Sedan 2885					
	Seven-Passenger Limousine 3385					
Chevrolet 490	Chevrolet Motor Co., Gen. Motors Bldg., Detroit, Mich.	4-3Hx4	Own	21.7	102	30x3½
	Chassis \$595					
	Roadster 635					
	Touring 645					
	Coupe 1155					31x4
	Sedan 1195					
Chevrolet FB 20-50 40-30	Chevrolet Motor Co., Gen. Motors Bldg., Detroit, Mich.	4-3½x5¼	Own	21.7	110	33x4
	Roadster \$1185					
	Touring 1185					
	Sedan 1885					
	Coupe 1885					
Cleveland Six 40 See page 19	Cleveland Automobile Co., Cleveland, Ohio	6-3x4½	Own	21.6	112	32x4
	Five-Passenger Touring \$1295					
	Three-Passenger Roadster 1295					
	Five-Passenger Sedan 2295					
	Four-Passenger Coupe 2195					
	Special Roadster 1465					
Climber K	Climber Motor Corp., Little Rock, Ark.	4-3½x5	Herschell-Spill	19.6	117	33x4
	Touring					
	Roadster					
Climber S	Climber Motor Corp., Little Rock, Ark.	6-3½x5	Herschell-Spill	25.3	125	32x4½
	Touring					
	Roadster					
Cole Aero-Eight, 870- 871-872-878-879 883-894-885-870 872 See page 19	Cole Motor Car Co., Indianapolis, Ind.	8-3½x4½	Northway	39.2	127	33x5
	Touring \$2795					
	Roadster 2550					
	Sportster 2695					
	Sportsedan 3995					
	Sportstine 3995					
	Coupe 3695					
	Tourosine 4295					
	Toursedan 3995					
	Californian 3145					
	Roadster Californian 3045					
Colonial	Colonial Motors Corp., 1108 Boylston St., Boston, Mass.	6-3½x5¼	Beaver	29.4	130	33x4½
	Six-Passenger Touring					
	Four-Passenger Sport					
	Two-Passenger Runabout					
	Six-Passenger Sedan					
	Four-Passenger Sedanette Coupe					
Columbia Six C, H, CS See page 27	Columbia Motors Co., Detroit, Mich.	6-3½x5	Rutenber	23.4	115	32x4
	Challenger Five-Passenger Touring \$1195					
	Challenger Four-Passenger Coupe 1995					
	Challenger Five-Passenger Sedan 1995					
Columbia Six CC, DD, EE, CCS., HH	Columbia Motors Co., Detroit, Mich.	6-3½x4½	Continental	25.6	115	32x4
	De Luxe Five-Passenger Touring 1475					
	Four-Passenger Sport 1475					
	Two-Passenger Roadster 1475					
	Five-Passenger Sedan 2350					
	Four-Passenger Coupe 2295					
Comet C 53 53-2	Comet Automobile Co., Garfield Avenue & I. C. R. R., Decatur, Ill.	6-3½x5¼	Continental	29.4	125	33x4½
	Five-Passenger Touring \$2250					
	Sport 3000					
	Seven-Passenger Touring 3100					
	Five-Passenger Sedan 3650					
	Seven-Passenger Sedan 3750					

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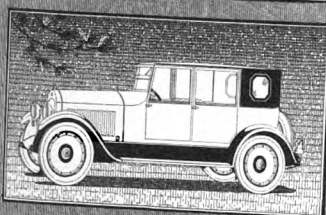


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Gasoline Automobiles—(Continued)

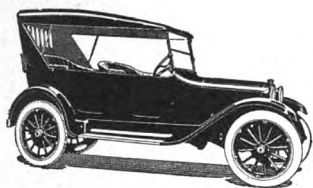
Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Commonwealth 42-45	Commonwealth Motors Co., 326 W. Madison St., Chicago, Ill. Five-Passenger Touring \$1395 Five-Passenger Touring (1921) 1395 Four-Passenger Sportster 1785 Five-Passenger Sedan 2465 Cortland Cart & Carriage Co.—See Hatfield.	4-3½x5	Herschell-Spill	19.6	117	32x4
Crawford 21-6-40	Crawford Automobile Co., Surrey & Summit Aves., Hagerstown, Md. Touring \$3000 Sport 3000 Roadster 3000 Sedan 4500	6-3½x5¼	Continental	29.4	122½	32x4
Crow-Elkhart L-53-55-54-54B	Crow-Elkhart Motor Corp., 1100 N. Main St., Elkhart, Ind. Three-Passenger Roadster \$1295 Five-Passenger Touring 1295 Four-Passenger Sport 1345 Four-Passenger Special Sport 1595	4-3½x5	Lycoming	19.6	117	32x3½
Crow-Elkhart S-65-63-64-67-64B	Crow-Elkhart Motor Corp., 1100 N. Main St., Elkhart, Ind. Five-Passenger Touring \$1545 Three-Passenger Roadster 1345 Four-Passenger Sport 1595 Seven-Passenger Sedan 2395 Four-Passenger Special Sport 1845	6-3¼x5	Herschell-Spill	25.3	117	33x4
Cunningham V37 59-79-66-57-58	Cunningham, Son & Co., James, 13 Canal St., Rochester, N. Y. Two-Passenger Roadster Four-Passenger Roadster Six-Passenger Touring Coupe Sedan Seven-Passenger Touring Six-Passenger Inside Drive Limousine Six-Passenger Town Car Six-Passenger Landulet Six-Passenger Sport	8-3½x5	Own	45.0	132	33x5
Daniels D-19	Daniels Motor Car Co., Third St. & Lebanon Valley R. R., Reading, Pa. Brougham \$6750 Landau 7250 Seven-Passenger Sedan 6950 Four-Passenger Sedan 7000 Seven-Passenger Suburban 7025 Limousine 6750 Col. Roadster 6500 Coupe 6250 Open Cars 5350 Landulet Suburban 8000 Landulet Brougham 7100	8-3½x5¼	Own	39.2	132¼	33x5
Davis 61-62-63-64-65- 66-67	Davis Motor Car Co., Geo. W., 1200 N. E. St., Richmond, Ind. Five-Passenger Touring \$1895 Four-Passenger Sport 1995 Four-Passenger Sport 2150 Five-Passenger Sedan 2795 Four-Passenger Coupe 2795 Roadster 1995 Roadster 2150	6-3¼x4½	Continental	25.3	120	33x4
Dispatch G	Dispatch Motor Car Co., 1200 14th Ave., S. E., Minneapolis, Minn. Two-Passenger Roadster \$1290 Four-Passenger Roadster 1350 Seven-Passenger Touring 1350 Coupe 1625 Sedan 1675	4-3½x5	Wisconsin	22.5	120	34x4
Dixie-Flyer H.S. 70	Kentucky Wagon Mfg. Co., Third & K Sts., Louisville, Ky. Touring \$1445 Roadster 1445 Sedan 2345 Coupe 2295 Speedster 1795 Sport Touring 1945	4-3½x5	Herschell-Spill	19.6	112	32x4

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Dodge See page 21	Dodge Brothers., Detroit, Mich. Touring..... \$ 985 Roadster..... 935 Sedan..... 1785 Coupe..... 1945	4-3½x4½	Own	24.0	114	32x4
Dorris-6-80	Dorris Motor Car Co., 4100 Laclede Ave., St. Louis, Mo. Seven-Passenger Touring..... \$4785 Four-Passenger Tourist..... 4785 Four-Passenger Coupe..... 5800 Seven-Passenger Sedan..... 6690	6-4x5	Own	38.4	132	33x5
Dort 17-12-17S-12C See page 21	Dort Motor Car Co., Flint, Mich. Touring..... \$ 985 Roadster..... 985 Sedan..... 1685 Coupe..... 1535	4-3½x5	Lycoming	19.6	108	31x4
Douglas G	Douglas Motor Corp., 30th & Sprague Sts., Omaha, Neb. Five-Passenger..... \$2000 Four-Passenger Speedster..... 2250 Seven-Passenger..... 2200	8-3½x5	Herschell-Spill.	33.8	122	34x4
DuPont	DuPont Motors, 13th & Pennsylvania Aves., Moore, Pa. Four-Passenger Touring..... \$3400 Five-Passenger Suburban Sedan..... 4900 Five-Passenger Touring Sedan..... 4900 Two-Passenger Roadster..... 3400	4-3½x5½	Own	24.6	124	32x4½
Duesenberg	Duesenberg Automobile & Motor Co., W. Washington & Hamilton Sts., Indianapolis, Ind. Two-Passenger Roadster..... Four-Passenger Touring..... Five-Passenger Touring.....	8-2½x5	Own	26.4	134	33x5
Durant A-22	Durant Motors, Inc., 1780 Broadway, New York N. Y. Five-Passenger Touring..... \$ 830	4-37⁄8x4¼	Own	24.0	109	31x4
Earl	Earl Motors, Jackson, Mich. Roadster..... Touring..... Sedan..... Coupe.....	4½x5	Own	18.2	109	31x4
Elcar 4-21 D.H.K.G.	Elkhart Carriage & Motor Car Co., Beardsley Ave., Elkhart, Ind. Touring..... \$1195 Sportster..... 1195 Roadster..... 1195 Coupe..... 1505 Sedan..... 1695	4-3½x5	Lycoming	19.6	117	33x4
Elcar-DeLuxe 6 D.H.K.G.	Elkhart Carriage & Motor Car Co., Beardsley Ave., Elkhart, Ind. Roadster..... \$1595 Sportster..... 1595 Sportster..... 1595 Coupe..... 2395 Sedan..... 2495 Suburban..... 2495	6-3½x4½	Continental	25.3	117	33x4
Elcar Standard 6	Elkhart Carriage & Motor Car Co., Beardsley Ave., Elkhart, Ind. Touring..... \$1385 Sport..... 1385 Roadster..... 1385 Coupe..... 1735 Sedan..... 1895	6-3½x5	Rutenber	23.4	117	33x4
Elgin K 1 See page 23	Elgin Motor Car Corp., Argo, Ill. Touring..... \$1495 Sedan..... 2395 Roadster..... 1595 Coupe..... 2395 Scout..... 1595	6-3½x4¼	Falls	23.4	117	33x4
						32x4

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The Locomobile Co.

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WE SHALL KEEP FAITH

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IT is common know-
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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Essex A-6-A See page 17	Essex Motors, 12601 E. Jefferson Ave., Detroit, Mich. Five-Passenger Touring.....\$1375 Two-Passenger Roadster.....1375 Five-Passenger Sedan.....2230 Two-Passenger Cabriolet.....1880	4-3½x5	Own	18.2	108¼	32x4
Fiat See page 27	Fiat, 150 West 57th St., New York, N. Y Importers					
Ford T	Ford Motor Co., of Delaware (Highland Park), Detroit, Mich. Chassis.....\$295 Touring.....355 Runabout.....325 Coupe.....595 Sedan.....660	4-3½x4	Own	22.5	100	30x3½
Franklin 9B	Franklin Mfg. Co., H. H., 101 W. Marcellus St. Syracuse, N. Y. Chassis.....\$2000 Touring.....2350 Two-Passenger Runabout.....2300 Brougham.....3200 Sedan.....3350 Demi-Sedan.....2750 Demi-Coupe.....2650	6-3¼x4	Own	25.3	115	32x4
Gardner G	Gardner Motor Co., Main & Rutger Sts., St. Louis, Mo. Five-Passenger Touring.....\$1195 Three-Passenger Roadster.....1195 Sedan.....2145	4-3½x5	Lycoming	19.6	112	32x3½
Grant H-Z	Grant Motor Car Corp., Coit. Rd. & Kirby Ave., Cleveland, Ohio. Five-Passenger Touring.....\$1550 Two-Passenger Roadster.....1550 Five-Passenger Sedan.....2450 Four-Passenger Coupe.....2450	6-3½x4½	Own	23.4	116	32x4
H. C. S.	H. C. S. Motor Car Co., 14th & Capitol Ave., Indianapolis Ind. Touring.....\$2775 Roadster.....2725 Coupe.....3450 Sedan.....3650	4-3½x5½	Weidely	21.0	120	32x4½
Halladay 21-22-23-24	Halladay Motors Corp., Newark, Ohio Two-Passenger Touring.....\$1885 Five-Passenger Touring.....1885 Manhattan Special Five-Passenger.....1985 Four-Passenger Coupe.....2385 Five-Passenger Sedan.....2485 Artercraft Special Five-Passenger.....2485	6-3½x5	Rutenber	23.4	116	34x4 33x4 35x4
Handley-Knight A	Handley-Knight Co., Kalamazoo, Mich. Seven-Passenger Touring.....\$2850 Seven-Passenger Sedan.....4185	4-4½x4½	Own	27.2	125	32x4½
Hanson Six 54-60	Hanson Motor Co., Ashby & Lee Sts., Atlanta, Ga. Five-Passenger Touring.....\$1795 Four-Passenger Sport.....1895 Two-Passenger Roadster.....1795 Five-Passenger Sedan.....2885 Four-Passenger Coupe.....2775 Seven-Passenger Touring.....1995	6-3¼x4½	Continental	25.3	121	32x4 33x4½
Harroun AA 2	Harroun Motors Corp., Wayne, Mich. Touring.....\$1195	4-3¼x5¼	Own	16.9	106	30x3½
Hatfield 42-A-C-B	Cortland Cart & Carriage Co., Sidney, N. Y. Five-Passenger Touring.....\$1495 Four-Passenger Roadster.....1495 Five-Passenger Sedan.....2395	4-3½x5	Herschell-Spill	19.6	115	32x4
Haynes M-55 See page 21	Haynes Automobile Co., Kokomo, Ind. Touring.....\$1785 Roadster.....1835 Sedan.....2835	6-3½x5	Own	29.4	121	33x4

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MINUTE MAN SIX



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IN THE new Rauch & Lang Electric we have, at last, the ideal automobile. It is the car that you have dreamed and talked so much about. The result of years of advanced engineering thought and development. The most practical, reliable, serviceable and economical car for the average requirements.

RAUCH & LANG, INC.
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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheel-base	Size of Tires
Haynes M-75	Haynes Automobile Co., Kokomo, Ind. Tourster..... \$2485 Brougham..... 3185 Touring..... 2485 Suburban..... 3485 Speedster..... 2885 Sedan..... 3485	6-3½x5½	Own	29.4	132	34x4
Holmes 1-4	Holmes Automobile Co., Winfield Way, Canton, Ohio..... Four-Passenger Roadster..... \$2950 Seven-Passenger Touring..... 2950 Four-Passenger Coupe..... 3850 Six-Passenger Sedan..... 4150 Seven-Passenger California Sedan..... 3200	6-3½x4½	Own	29.4	128	34x4½
Hudson Super-Six	Hudson Motor Car Co., 12601 E. Jefferson St., Detroit, Mich..... Seven-Passenger..... \$1895 Four-Passenger..... 1895 Cabriolet..... 2495 Sedan..... 2895 Coupe..... 2770 Touring Limousine..... 3120 Limousine..... 3495	6-3½x5	Own	29.4	126	34x4½
Huffman W	Huffman Brothers Motor Co., Elkhart, Ind. Five-Passenger Touring..... \$1795	6-3½x4½	Continental	25.3	130	32x4
Hupmobile R See page 23	Hupp Motor Car Corp., Detroit, Mich..... Touring..... \$1485 Roadster..... 1485 Sedan..... 2485 Coupe..... 2400	4-3½x5½	Own	16.9	112	32x4
Jackson 6-38	Jackson Motors Corp., Jackson, Mich..... Touring..... \$1950 California Special..... 2785 Sport..... 2685 Semi-Sport..... 2350 Coupe..... 3760 Sedan..... 3760	6-3½x4½	Continental	25.3	121	32x4½
Jordan F See page 17	Jordan Motor Car Co., Cleveland, Ohio..... Seven-Passenger Touring..... \$2475	6-3½x5½	Continental	29.4	127	32x4½
Jordan M	Jordan Motor Car Co., Cleveland, Ohio..... Five-Passenger..... \$2250 Roadster..... 2250 Brougham..... 3300 Sedan..... 3300 Kentucky Wagon Mfg. Co.—See Dixie-Flyer.	¾x4½	Continental	25.3	120	32x4
Kenworthy	Kenworthy Motors Corp., 211 E. Mishawaka Ave., Mishawaka, Ind..... Four-Passenger Touring..... Seven-Passenger Touring.....	6-3½x5½	Own	29.4	130	32x4½
King J.	King Motor Car Co., 8745 Conant Rd., Detroit, Mich..... Touring..... \$2125 Foursome..... 2125 Road-King..... 2140 Coupe..... 3125 Sedan..... 3235	8-3 x 5	Own	28.8	120	32x4½
Kissel Six C. B.	Kissel Motor Car Co., Hartford, Wis..... Seven-Passenger Standard Touring..... \$2475 Four-Passenger De Luxe Touring..... 2975 Four-Passenger De Luxe Tourster..... 2975 Four-Passenger De Luxe Urban Sedan..... 4150 Five-Passenger De Luxe Coach Sedan..... 4075 Four-Passenger De Luxe Coupe..... 3775 Six-Passenger De Luxe Sedan..... 3775 Two-Passenger De Luxe Speedster..... 2975	6-3½x5½	Own	26.3	124	32x4½

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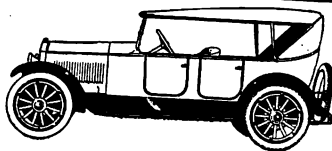
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Every Line of Business

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live dealers*

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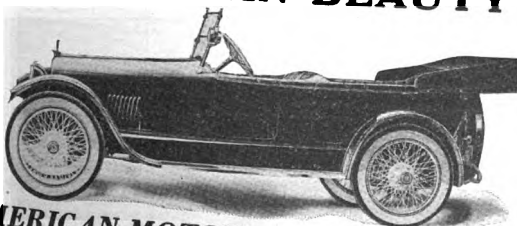


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Sedan

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Kline-Kar 6-55 Series K	Kline Car Corp., 701-11 E. Carey St., Richmond Va. Touring.....\$2090 Four-Passenger Sport Touring.....2090 Roadster.....2090 Sedan.....3290 Coupe.....3250	6-3½x4½	Continental	25.3	121	33x4
LaFayette	La Fayette Motors Co., Mars Hill, Indianapolis, Ind. Touring.....\$4850 Torpedo.....4850 Roadster.....4850 Sedan.....6500 Coupe.....6250 Limousine.....6750	8-3½x5½	Own	33.8	132	33x5
Leach 22 C-D-E-A-B	Leach-Biltwell Motor Car Co., 4800 Santa Fe Ave., Los Angeles Cal. Two-Passenger Roadster.....\$6500 Four-Passenger Coupelet.....6500 Four-Passenger Chummy.....6500 Five-Passenger Touring.....6500 Seven-Passenger Touring.....6500	6-3½x5½	Own	29.4	134	32x4½
Lexington S-T See page 25	Lexington Motor Co., Connersville, Ind. Thorobred.....\$1985 Touring.....1885 Lex-Sedan.....2185 Coupe.....2750 Sedanette.....2850 Sedan.....3150 Lexington T Touring.....2785 Sedanette.....3750 Salon Sedan.....4250 Lark.....2785	6-3½x4½	Continental	25.3	122	32x4
Lexington R	Lexington Motor Co., Connersville, Ind. Touring.....\$1585 Sportown.....1585 Tourabout.....1685 Sedanette.....2550 Convertible Sedan.....1985 Lex Sedan.....1985 Coupe.....2650 Salon Sedan.....2750 Limousine Brougham.....3250	6-3½x4½	Continental	25.3	122	34x4
Lexington 6-0-17	Lexington Motor Co., Connersville, Ind. Touring.....\$1185 Clubster.....1345 Convertible Sedan.....1510 Convertible Coupe.....1510	6-3½x4½	Continental	25.3	116	32x4
Liberty 10-C	Liberty Motor Car Co., Charlevoix Ave. & Connors Rd., Detroit, Mich. Five-Passenger Touring.....\$1795 Two-Passenger Roadster.....1795 Four-Passenger Sport.....1885 Five-Passenger Sedan.....2850 Four-Passenger Coupe.....2825	6-3½x5	Own	23.4	117	32x4
Lincoln	Lincoln Motor Co., Warren Ave., Detroit, Mich. Touring.....\$4300 Phaeton.....4300 Roadster.....4300 Coupe.....4950 Sedan.....5400 Town Brougham.....6650 Suburban Limousine.....6000 Town Car.....6000	8-3½x5	Own	36.4	130	33x5
Locomobile 48	Locomobile Co., 1 S. Main St., Bridgeport, Conn. Seven-Passenger Touring.....\$8600 Four-Passenger Sport.....8600 Limousine.....10000 Landaulet.....10000	6-4½x5½	Own	48.6	142	35x5
Lorraine 21 T.S.C.R.	Lorraine Motors Corp., Grand Rapids, Mich. Touring.....\$1665 Sedan.....2590 Coupe.....2590 Roadster.....1665	4-3½x5	Herschell-Spill	19.0	114	32x4

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
McFarlan 142-145-147 151-153-154-155-156 157-158-161	McFarlan Motor Corp., Mount & High Sts., Connersville, Ind.	6-4½x6	Own	48.6	140	33x5
	Chassis	\$3350				
	Two-Passenger Roadster	6300				
	Four-Passenger Sport	6300				
	Seven-Passenger Touring	6300				
	Town Car	7500				
	Coupe	7500				
	Seven-Passenger Knickerbocker Cab- riolet	9000				
	Sport Sedan	7500				
	Touring Sedan	7500				
	Suburban Sedan	7800				
	Limousine	7800				
	Continental Landaulet	8500				
Malibohm	Malibohm Motors Co., Sandusky, Ohio.	6-3½x4½	Own	23.4	116	32x4
	Phaeton	\$1575				
	Roadster	1575				
	Sporting Roadster	1675				
	Sedan	2395				
	Coupe	2395				
	Sport Special	1750				
Marmon B 34	Nordyke & Marmon Co., Kentucky Ave. & Mor- ris St., Indianapolis, Ind.	6-3½x5½	Own	33.7	136	32x4½
	Seven-Passenger Touring	\$3985				
	Four-Passenger Roadster	3985				
	Four-Passenger Touring	3985				
	Two-Passenger Speedster	4185				
	Seven-Passenger Sedan	5275				
	Seven-Passenger Town Car	5400				
	Four-Passenger Coupe	4875				
	Seven-Passenger Limousine	5400				
	Seven-Passenger Suburban	5425				
Maxwell 25 See page 25	Martin-Wasp Corp.—See Wasp.					
	Maxwell Motor Sales Corp., Detroit, Mich.— See also Chalmers	4-39x4½	Own	21.0	118	30x3½
	Five-Passenger Touring	\$ 845				
	Three-Passenger Roadster	845				
	Five-Passenger Sedan	1545				
	Three-Passenger Coupe	1445				
Meteor	Meteor Motors Corp., 3607 Lancaster Ave., Philadelphia, Pa.	4-4½x6	Rochester-Dues- enberg	28.9	129	32x4½
	Chassis	\$4000				
	Two-Passenger Standard	5500				
	Four-Passenger Standard	5500				
Merco	Merco Motors Co., 500 Whitehead Road, Trenton, N. J.	4-3¾x6¾	Own	22.5	132	32x4½
	Four-Passenger Sport	\$3950				
	Six-Passenger Touring	3950				
	Four-Passenger Runabout	3950				
	Two-Passenger Runabout	3950				
	Four-Passenger Coupe	4850				
	Six-Passenger Limousine	5250				
Merit C-B-2	Merit Motor Co., 6505 Cedar Ave., Cleve- land, Ohio.	6-3½x4½	Continental	25.3	119	32x4
	Four-Passenger Sport	\$2245				
	Two-Passenger Roadster	2245				
Mitchell F 40 See page 25	Mitchell Motors Co., Racine, Wis.	6-3½x5	Own	25.3	120	33x4
	Three-Passenger Roadster	\$1490				
	Five-Passenger Touring	1490				
	Four-Passenger Sport	1790				
	Seven-Passenger Touring	1795				
	Four-Passenger Coupe	2290				
	Five-Passenger Sedan	2440				
Mitchell F-42-45	Small Co., Wm., 33-37 W 11th St., Indianapolis, Ind.	4-3½x4½	Own	16.9	115	32x3½
	Touring	\$1295				
	Roadster	1295				
	Sedan	2175				
	Coupe	2175				
Monroe B-9-10-11-12	Moon Motor Car Co., 4400 N. Main St., St. Louis, Mo.	6-3½x5½	Continental	29.4	135	33x4½
	Touring	\$2685				
Moon 6-36-30						

Please mention The Automobile Trade Directory

Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Moon 6-48	Moon Motor Car Co., 4400 N. Main St., St. Louis, Mo. Touring.....\$1985 Roadster.....1985 Coupe.....2985 Sedan.....2985 Brougham.....2985	6-3 $\frac{1}{4}$ x4 $\frac{1}{2}$	Continental	25.3	122	32x4
Moore	Moore Motor Vehicle Co., N. Tilton St., Dan- ville, Ill. Five-Passenger Touring.....\$1175	4-3x5	Own	14.4	108	30x3 $\frac{1}{2}$
Nash 681-682-685-684	Nash Motors Co., Kenosha, Wis. Five-Passenger Touring.....\$1545 Two-Passenger Roadster.....1525 Four-Passenger Sport.....1695 Seven-Passenger Sedan.....2695 Four-Passenger Coupe.....2395 Seven-Passenger Tourist.....1695	6-3 $\frac{1}{4}$ x5	Own	25.3	121	33x4
Nash 41-43-43-44	Nash Motors Co., Kenosha, Wis. Five-Passenger Touring.....\$1195 Two-Passenger Roadster.....1175 Three-Passenger Coupe.....1735 Five-Passenger Sedan.....1935	4-3 $\frac{1}{4}$ x5	Own	18.2	112	33x4
National "Sextet"	National Motor Car & Vehicle Corp., 1041 E. 22nd St., Indianapolis, Ind. Two-Passenger Roadster.....\$2990 Four-Passenger Phaeton.....2990 Seven-Passenger Touring.....2990 Seven-Passenger Sedan.....4140 Four-Passenger Coupe.....4240	6-3 $\frac{1}{2}$ x5 $\frac{1}{4}$	Own	29.4	130	32x4 $\frac{1}{2}$
Noma A-19, B-20, C-20	Nordyke & Marmon Co.—See Marmon. Noma Motor Corp., 155 Ave. D, New York, N. Y. Speedster..... Foursom.....	6-3 $\frac{1}{4}$ x4 $\frac{1}{2}$	Continental	25.3	128	33x4
Northway	Northway Motor Corp., 1 Beacon St., Boston, Mass. Touring.....\$4200 Roadster.....4200 Limousine Sedan.....6000 Sedan Coupe..... Sedan.....	6-3 $\frac{1}{4}$ x4 $\frac{1}{2}$	Own	25.3	128	33x4
Norwalk 4-30 K. S.	Norwalk Motor Car Co., Martinsburg, W. Va. Five-Passenger.....	4-3 $\frac{1}{2}$ x5	Lycoming	19.6	116	32x3 $\frac{1}{2}$
Oakland 34-C	Oakland Motor Car Co., 240 Oakland Ave., Pon- tiac, Mich. Roadster.....\$1095 Touring.....1145 Sport.....1265 Coupe.....1625 Sedan.....1725	6-2 $\frac{1}{2}$ x4 $\frac{1}{4}$	Own	19.0	115	32x4
Ogren	Ogren Motor Car Co., Milwaukee, Wis. Seven-Passenger Standard Touring.....\$3500 Four-Passenger Standard Roadster.....3600 Four-Passenger Sport Touring.....3750 Four-Passenger Sport Roadster.....3850 Seven-Passenger Sport Touring.....3900 Four-Passenger Coupe.....5000 Four-Passenger Sport Coupe.....5250 Five-Passenger Sedan.....5400 Seven-Passenger Sedan.....5550 Seven-Passenger Limousine.....5750	6-3 $\frac{1}{2}$ x5 $\frac{1}{4}$	Own	29.4	134	33x5
Oldsmobile 43-A	Olds Motor Works, Lansing, Mich. Four-Passenger Touring.....\$1345 Roadster.....1325 Sedan.....2100 Coupe.....1875	4-3 $\frac{1}{2}$ x5 $\frac{1}{4}$	Own	21.7	115	32x4
Oldsmobile 47	Olds Motor Works, Lansing, Mich. Four-Passenger Touring.....\$1725 Coupe.....2225 Four-Passenger Sedan.....2425	8-2 $\frac{1}{4}$ x4 $\frac{1}{2}$	Own	26.4	115	32x4

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheel- base	Size of Tires
Overland 4	Willys-Overland, Inc., Toledo, Ohio. (See also Willys-Knight) Five-Passenger Touring..... \$ 695 Two-Passenger Roadster..... 695 Five-Passenger Sedan..... 1275 Two-Passenger Coupe..... 1000	4-3½x4	Own	18.2	100	30x3 ½
Packard Single-Six	Packard Motor Car Co., E. Grand Blvd. & Belt Line, Detroit, Mich. Runabout..... Touring..... Coupe..... Sedan.....	6-3½x4½	Own	27.3	116	33x4½
Packard Twin-Six	Packard Motor Car Co., E. Grand Blvd. & Belt Line, Detroit, Mich. Touring..... Duplex Sedan..... Duplex Coupe..... Runabout..... Limousine..... Phaeton.....	12-3x5	Own	43.2	136	35x5
Paige 6-44	Paige-Detroit Motor Car Co., Fort & McKinstry Sts., Detroit, Mich. Five-Passenger Touring..... \$1635 Two-Passenger Roadster..... 1655 Five-Passenger Sedan..... 2570 Four-Passenger Coupe..... 2450 Four-Passenger Sport..... 1925	6-3½x5	Own	25.3	119	32x4
Paige 6-66	Paige-Detroit Motor Car Co., Fort & McKinstry Sts., Detroit, Mich. Sporting Roadster..... \$3295 Four-Passenger Sport..... 2975 Seven-Passenger Touring..... 2875 Seven-Passenger Sedan..... 3930 Five-Passenger Coupe..... 3765 Limousine..... 4030	6-3½x5	Continental	33.7	131	33x4½
Pan-American 6-55 See page 27	Pan-American Motors Corp., Decatur, Ill. Five-Passenger Touring..... \$2000 Two-Passenger Roadster..... 2000 Seven-Passenger Sedan..... 3000 Seven-Passenger Touring..... 2100 Five-Passenger Touring (Aircraft Top) 2500 Seven-Passenger Touring (Aircraft Top)..... 2600	6-3½x5	Herschell-Spill	25.3	121	33x4
Pan A	Pan Motor Co., St. Cloud, Minn. Five-Passenger Tourist-Sleeper..... \$1500	4-3½x5	Own	16.9	108	33x4
Parenti 1921	Parenti Motors Corp., Kensington Northumber- land Ave., Buffalo, N. Y. Five-Passenger Touring..... \$2000 Five-Passenger Sedan..... 3000	6-3½x4½	Falls	23.4	123	33x4
Paterson 6-50	Paterson Co., W. A., Flint, Mich. Five-Passenger Touring..... \$1895 Five-Passenger Coupe..... 2985 Seven-Passenger Touring..... 1925 Five-Passenger Sedan..... 2985	6-3½x4½	Continental	25.3	120	33x4
Peoria 58 Series 7	Peoria Motor Car Co., Quinley Ave. & S. E. 93d St., Cleveland, Ohio. Chassis..... \$2310 Four-Passenger Roadster..... 2850 Seven-Passenger Touring..... 2850 Four-Passenger Coupe..... 3500 Seven-Passenger Sedan..... 3790 Seven-Passenger Sedan-Limousine..... 4060 Five-Passenger Sedan..... 3650	8-3½x5	Own	33.8	125	34x4½
Piedmont R-30	Carpenter, M. H., 93 Sunswick St., Long Island City, N. Y. Chassis..... \$6500 Touring..... 9600 Closed Car..... 11500	4-3½x6	Own	24.8	125	32x4½
Piedmont 4-30	Piedmont Motor Car Co., Lynchburg, Va. Five-Passenger Touring..... \$970	4-3½x5	Lycorning	19.6	116	32x3½
Piedmont 6-40	Piedmont Motor Car Co., Lynchburg, Va. Five-Passenger Touring..... \$1285	6-3½x4½	Continental	25.3	122	32x4

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires	
Pierce-Arrow 38	Pierce-Arrow Motor Car Co., 1695 Elmwood Ave., Buffalo, N. Y. Coupe.....\$8000 Four-Passenger Coupe Sedan.....8000 Four-Passenger Brougham.....8000 Four-Passenger Four-Door Sedan.....8250 Four-Passenger Touring.....6500 French Limousine.....8250 Landaulet.....8250 Vestibule Sedan.....8500 Seven-Passenger Sedan.....8500 Seven-Passenger Touring.....6500 Runabout.....7000	6-4	25½	Own	38.4	138	33x5
Pilot 6-50	Pilot Motor Car Co., 283 Fort Wayne Ave., Richmond, Ind. Two-Passenger Roadster.....\$2285 Five-Passenger Touring.....2285 Five-Passenger Sedan.....3400 Four-Passenger Coupe.....3350 Seven-Passenger Touring.....2335	6-3½	x5	Herschell-Spill	25.3	126	32x4½
Pilot 6-45	Pilot Motor Cars Co., 281 Ft. Wayne Ave., Richmond, Ind. Four-Passenger Roadster.....\$1945 Five-Passenger Touring.....1895	6-3½	x5	Teetor Hartley	23.4	120	32x4
Premier-6 D	Premier Motor Corp., Indianapolis, Ind. Two-Passenger Roadster.....\$3690 Four-Passenger Open.....3690 Seven-Passenger Open.....3890 Four-Passenger Closed.....5090 Seven-Passenger Limousine.....5190 Four-Passenger Coupe.....4690	6-3¾	x5½	Own	27.3	126½	32x4½
R & V R	R & V Motor Co., East Moline, Ill. Five-Passenger Touring.....\$2150 Five-Passenger Sedan.....2950 Four-Passenger Coupe.....2850	4-3¾	x5	Own	22.5	116	32x4
R & V	R & V Motor Co., East Moline, Ill. Seven-Passenger Touring.....\$3350 Four-Passenger Sport.....3350 Two-Passenger Roadster.....3350 Seven-Passenger Sedan.....4200 Four-Passenger Coupe.....4000	6-3½	x4½	Own	29.4	127	32x4½
Ranger A-20	Southern Motor Mfg. Ass'n., Beatty Bldg., Houston, Texas. Two-Passenger Roadster..... Five-Passenger Touring.....	4-3¾	x5	Own	18.2	116	32x4
Reo T-6 See page 27	Reo Motor Car Co., Lansing, Mich. Touring.....\$1850 Roadster.....1850 Sedan.....2750 Coupe.....2700	6-3½	25	Own	24.3	120	33x4
ReVeré F	ReVeré Motor Car Corp., Logansport, Ind. Five-Passenger Touring.....\$4650 Four-Passenger Touring.....4650 Roadster.....4650 Speedster.....4850 Sedan.....6500	4-4½	x6	Duesenberg	32.4	131	32x4½
Roamer See page 17	Barley Motor Car Co., Kalamazoo, Mich. Four-Passenger Sport.....3785 Two-Passenger Speedster.....3985 Four-Passenger Roadster.....3850 Two-Passenger Roadster.....3850 Four-Passenger Touring.....3650	4-4½	x6	Duesenberg	25.6	128	32x4½
Roamer	Barley Motor Car Co., Kalamazoo Mich. Seven-Passenger Touring.....2750 Four-Passenger Sport.....2650 Two-Passenger Roadster.....2750 Four-Passenger Roadster.....2750 Three-Passenger Cabriolet.....3650 Four-Passenger Coupe.....3850 Five-Passenger Sedan.....3950 Seven-Passenger Suburban Sedan.....4250 Five-Passenger Town Car.....4000 Five-Passenger Limousine.....4000 Five-Passenger Landaulet.....4000	6-3½	25½	Continental	29.4	128	32x4½

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Strokes of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Rock Falls 12	Rock Falls Mfg. Co., Sterling, Ill. Sedan Limousine	6-3½x5	Continental	33.5	132	35x5
Saxon-Duplex	Saxon Motor Car Corp., 3733 Beaufait Ave., Detroit, Mich. Touring.....\$1495 Blackstone Sport Touring.....1895 Sedan.....2295 Coupe.....2295	4-3½x5	Own	19.6	112	32x4
Sayers-Six	Sayers & Scoville Co., Gast and Summer Sts., Cincinnati, Ohio. Five-Passenger Touring.....\$2195 Five-Passenger Sedan.....2395 Two-Passenger Roadster.....2495	6-3½x4½	Continental	25.3	118	33x4
Scripps-Seeth B 28-48-41-42 See page 27	Scripps-Seeth Corp., Detroit, Mich. Five-Passenger Touring.....\$1295 Three-Passenger Roadster.....1295 Five-Passenger Sedan.....2100 Four-Passenger Coupe.....1950	6-2½x4½	Northway	19.0	115	32x4
Scripps-Seeth F	Scripps-Seeth Corp., Detroit, Mich. Five-Passenger.....\$1490 Three-Passenger.....1470 Five-Passenger Sedan.....2375 Four-Passenger Coupe.....2350	6-3½x4½	Continental	25.3	115	32x4
Seneca L O	Seneca Motor Car Co., S. Poplar St., Fostoria, O. Five-Passenger Touring.....\$1045 Two-Passenger Roadster.....1045	4-3½x4½	LeRoi	15.6	108	30x3½
Severin H	Severin Motor Co., 1606-10 Grand Ave., Kansas City, Mo. National Touring.....\$2550 Sport.....2550	6-3½x5½	Continental	29.4	122½	33x5
Skelton 35	Skelton Motors Corp., 2229-33 Locust St., St. Louis, Mo. Two-Passenger Roadster.....\$1395 Five-Passenger Touring.....1395	4-3½x5	Lyeomg	19.6	112	32x3½
	Small Co.—See Monroe					
	Southern Motor Mfg. Ass'n. See Ranger.					
	Sparks Machine & Tool Co.—See Brook.					
Standard Eight	Standard Steel Car Co., Frick Bldg., Pittsburgh, Pa. Two-Passenger Roadster.....\$3400 Four-Passenger Sport.....3400 Seven-Passenger Touring.....3400 Four-Passenger Coupe.....4500 Seven-Passenger Sedan.....4500 Four-Passenger Sedanette.....4500 Seven-Passenger Vestibule Sedan.....5000	8-3½x5	Own	33.8	127	34x4½
Stanwood-Six	Stanwood Motor Car Co., Fullerton Bldg., St. Louis, Mo. Five-Passenger Touring.....2050 Two-Passenger Roadster.....2050 Coupe Sedan.....2950	6-3½x4½	Continental	25.3	118	33x4
Stearns 8K14	Stearns Co., F. B., 12435 Euclid Ave., Cleveland, Ohio. Four-Passenger.....\$2475 Five-Passenger.....2450 Seven-Passenger.....2575 Roadster.....2550 Coupe.....2400 Limousine.....4250 Sedan.....2700 Town Car.....4400	4-3½x5½	Own	22.5	125	34x4½
Stevens-Duryea E	Stevens-Duryea, Chisago Falls, Mass. Chassis.....\$5500 Touring.....6800 Four-Passenger Closed Coupe Sport.....6900 Two-Passenger Roadster.....7250 Cabriolet.....9500 Seven-Passenger Vestibule Limousine.....8600 Three-Quarter Limousine.....9500 Town Brougham.....9500 Four-Passenger Sedan.....9000	6-4½x5½	Own	47.2	128	35x5

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Gasoline Automobiles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheel- base	Size of Tires
Stephens Salient Six	Stephens Motors Works of Moline Plow Co. Freeport, Ill. Two-Passenger Roadster.....\$1900 Two-Passenger Special Roadster.....2000 Four-Passenger Touring.....1985 Four-Passenger Special Touring.....2085 Six-Passenger Touring.....2065 Six-Passenger Special Touring.....2165 Four-Passenger Sedanette.....3100 Seven-Passenger Sedan.....3100	6-3½x4½	Own	25.3	122	33x4½
Studebaker E. G. Big Six	Studebaker Corp. of America, Bronson & Main Sta., South Bend, Ind. Seven-Passenger Touring.....\$1985 Seven-Passenger Sedan.....2950 Coupe.....2850	8-3½x5	Own	36.0	126	33x4½
Studebaker E. H. Special Six	Studebaker Corp. of America, Bronson & Main Sta., South Bend, Ind. Touring.....\$1635 Two-Passenger Roadster.....1585 Four-Passenger Roadster.....1635 Five-Passenger Sedan.....2550 Coupe.....2450	6-3½x5	Own	29.4	119	32x4
Studebaker E. J. Light Six	Studebaker Corp. of America, Bronson & Main Sta., South Bend, Ind. Seven-Passenger Touring.....\$1335 Two-Passenger Roadster.....1300 Sedan.....1995 Coupe-Roadster.....1695	6-3½x4½	Own	23.4	112	32x4
Stutz K	Stutz Motor Car Co. of America, Tenth St. & N. Capitol Ave., Indianapolis, Ind. Four-Passenger Sport.....\$4000 Six-Passenger Touring.....4000 Two-Passenger Roadster.....3900 Two-Passenger Bearcat.....3900 Coupe.....5500	4-4½x6	Own	30.6	130	32x4½
Templar A-445	Templars Motor Corp., Halstead Ave., Cleveland, Ohio Sportette.....\$2385 Touring.....2385 Touring Roadster.....2385 Sedan.....3185 Coupe.....3185	4-3½x5½	Own	18.2	118	32x4
Tulsa E-1-2-3	Witt-Thompson Motor Co., Tulsa, Okla. Five-Passenger Touring.....\$1385 Three-Passenger Roadster.....1385 Three-Passenger Oil-Field Special Roadster.....1385	4-3½x5	Herschell-Spill	10.6	117½	33x4
Tulsa F	Witt-Thompson Motor Co., Tulsa, Okla. Five-Passenger Touring.....\$1765	6-3½x5	Herschell-Spill	25.3	117½	33x4
Vellie 34	Vellie Motors Corp., 109 Vellie Place, Moline, Ill. Five-Passenger.....\$1385 Two-Passenger.....1385 Sedan.....2085 Coupe.....2085	6-3½x4½	Falls	23.4	112	32x3½
Vellie 48	Vellie Motors Corp., 109 Vellie Place, Moline, Ill. Five-Passenger.....\$1585 Two-Passenger.....1585 Sport.....1800 Seven-Passenger.....1950 Coupe.....2485 Sedan.....2485	6-3½x4½	Continental	25.3	115	32x4
Vogue 6-55	Vogue Motor Car Co., S. Washington & River Sta., Tiffin, Ohio Five-Passenger Touring.....\$2285 Seven-Passenger Sedan.....3050 Five-Passenger Coupe.....3050	6-3½x5	Herschell-Spill	25.3	124	32x4
Vogue 6-66	Vogue Motor Car Co., S. Washington & River Sta., Tiffin, Ohio Five-Passenger Touring.....\$2485 Seven-Passenger Sedan.....3250 Five-Passenger Coupe.....3250	6-3½x5½	Continental	29.4	124	33x4½

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Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C., H. P.	Wheel- base	Size of Tires
Waltham	Waltham Motor Mfrs., River St., Waltham, Mass. Touring.....\$1995 Roadster.....1995 Coupe.....2795 Sedan.....2895	6-3½x5	Rutenber	23.4	120	32x4
Washington 1921 See page 19	Washington Motor Co., Eaton, Ohio..... Touring.....\$1685 Roadster.....1685	6-3½x4¼	Falls	23.4	116	32x4
Wasp 211	Martin-Wasp Corp., Bennington, Vt..... Four-Passenger Open.....\$8500	4-4½x5½	Wisconsin	36.1	132	33x5
Westcott C-48	Westcott Motor Car Co., Warder & Spring Sts., Springfield, Ohio..... Seven-Passenger Touring.....\$2990 Seven-Passenger Sedan.....3490 Seven-Passenger Limousine-Sedan.....3690	6-3½x5½	Continental	29.4	125	32x4½
Westcott C-38	Westcott Motor Car Co., Warder & Spring Sts., Springfield, Ohio..... Four-Passenger Touring.....\$1990 Five-Passenger Touring.....1890 Two-Passenger Roadster.....1890 Four-Passenger Coupe.....2890 Five-Passenger Sedan.....2890	6-3½x4½	Continental	25.3	118	33x4
Wills Sainte Claire	Wills & Co., C. H., Marysville, Mich..... Four-Passenger Roadster.....\$2875 Five-Passenger Touring.....2875 Four-Passenger Coupe.....3750 Seven-Passenger Sedan.....4100	8-8½x4	Own	33.8	121	32x4½
Winther Six 61 See page 37	Winther Motors, Inc., Kenosha, Wis..... Five-Passenger Touring.....	6-3½x5	Herschell-Spill	25.3	120	32x4½
Willys-Knight 20	Willys-Overland, Inc., Toledo, Ohio..... (See Overland) Five-Passenger Touring.....\$1895 Three-Passenger Roadster.....1895 Coupe.....2550 Sedan.....2750	4-3½x4½	Own	2.10	118	33x4
Winton 25	Winton Co., 10610 Berea Rd., Cleveland, Ohio..... Two-Passenger Roadster.....\$4600 Four-Passenger Sport.....4975 Seven-Passenger Touring.....4975 Victoria Four-Passenger.....4600 Sedan Four-Passenger.....5950 Sedan Seven-Passenger Fore-Door.....6200 Limousine French Town Car.....6200 Seven-Passenger Limousine.....6950 Three-Quarter.....5950 Seven-Passenger, Fore-Door Limousine.....6200 Seven-Passenger Limousine-Landaulet.....6350 Witt-Thompson Motors Co. See Tulsa. Yellow Cab Mfg. Co. See "Ambassador"	6-3½x5½	Own	33.7	132	35x5

Electric Automobiles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Make of Battery	Wheel- base	Size of Tires
troit 93-90	Detroit Electric Car Co., 6661 Mt. Elliott Ave., Detroit Mich..... Five-Passenger Brougham.....\$3985 Four-Passenger, Coupe.....2985	Philadelphia	100	32x4½
born 271	Milburn Wagon Co., Monroe St., Toledo, Ohio..... Five-Passenger Brougham.....	Philadelphia	105	32x4
ch & Lang C 55 See page 25)	Ranch & Lang, Chicopee Falls, Mass..... Coach.....\$4750	Philadelphia (Exide)	102	33x4½

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Steam Automobiles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	H.P.	Wheel- base	Size of Tires
Stanley 735 A. B. C. D. E.	Stanley Motor Carriage Co., 44 Hunt St., Newton, Mass. Five-Passenger Touring..... Seven-Passenger Touring..... Four-Passenger Coupe..... Seven-Passenger Sedan..... Two-Passenger Roadster.....	20	130	32x4½
	\$2600 2600 3775 3850 2800			

Gasoline Commercial Vehicles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capac- ity, Tons	No. of Cylin- ders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
	Abbott-Downing Truck & Body Co.—See Concord.								
Acason.....	Acason Motor Truck Co., 431 Brooklyn Ave., Detroit, Mich.								
	Model R.....	1	4-3½x5¼	Waukesha.....	22.5	142	36x3½	36x5	\$2260
	Model RB.....	1½	4-3½x5¼	Waukesha.....	22.5	142	36x3½	36x6	2485
	Model H.....	2½	4-4½x5¾	Waukesha.....	30.6	150	36x4	36x8	3295
	Model L.....	3½	4-4½x5¾	Waukesha.....	30.6	180	35x5	36x10	4295
	Model M.....	5	4-5 x6¾	Waukesha.....	40.0	187	36x5	40x12	5250
Aee.....	American Motor Truck Co., 16th St. & B. & O. R. R., Newark, Ohio.								
	Model.....	1½	4-3½x5	Buda.....	22.5	144	35x5P	38x7	....
	Model.....	2½	4-4½x5¾	Buda.....	28.9	144 156	36x4	36x7	....
Acme.....	Acme Motor Truck Co., Haynes St., Cadillac, Mich.								
	Model G.....	¾	4-3½ 5	Continental.....	22.5	130	34x5P	35x5P	....
	Model B.....	1	4-3½x5	Continental.....	22.5	130	34x3½	34x5	....
	Model F.....	1½	4-3½x5	Continental.....	22.5	141	34x3½	34x5	....
	Model A.....	2	4-4½x5¾	Continental.....	27.2	148	36x4	36x7	....
	Model C.....	3½	4-4½x5¾	Continental.....	32.4	168	36x5	40x5D	....
	Model AC.....	3½	4-4½x5¾	Continental.....	32.4	156	36x4	36x7	....
	Model E.....	5	4-4½x6	Continental.....	36.1	180	36x6	40x6D	....
Akron-Multi.....	Thomart Motor Co., Akron, Ohio Model 20.....	1½	4-4x5¼	Hinkley.....	25.6	133½	34x5P	34x5P	1695
All-American.....	All-American Truck Co., 6503 W. Grand Ave. Chicago, Ill. Model A.....	1½	4-3½x5	Herschel-Spill	16.9	130	32x4P	32x4P	1594
All Power.....	All Power Truck Co., 127 Woodbridge Ave. E., Detroit, Mich. Model C.....	5	4-4½x5¾	Continental.....	27.2	168	36x6	36x10	6000
American.....	American Motor Truck & Tractor Co. Portland, Conn.								
	Model 25.....	2½	4-4x6	Wisconsin.....	25.6	158	36x4	36x4D	335
	Model 40.....	4	4-4½x6	Wisconsin.....	32.4	158	36x5	36x5D	427
	Model 50.....	5	4-4½x6	Wisconsin.....	32.4	170	36x5	36x5	450
Apex.....	Hamilton Motors Co., Fulton St., Grand Haven, Mich.								
	Model G.....	1	4-3½x5	Lycorning.....	19.6	130	33x5P	33x5P	145
	Model D.....	1½	4-3½x5	Buda.....	22.5	130	34x3½	34x4	191
	Model E.....	2½	4-4½x5¾	Buda.....	28.9	150	36x4	36x7	208
	Model F.....	3½	4-4½x6	Buda.....	32.4	168	36x5	36x10	397
Armleder.....	Armleder Co., O., Plum, Charles & 12th Sts., Cincinnati, Ohio.								
	Model 20.....	1	4-3½x5¼	Buda.....	22.5	148	34x3½	34x5	...
	Model H. W.....	2½	4-4½x5¾	Buda.....	28.9	148 166	36x4	36x7	...
	Model K. W.....	3½	4-4½x6	Buda.....	32.4	156 186	36x5	36x5D	...
Atco.....	American Truck & Trailer Corp., Stoddard Pl., Kankakee, Ill.								
	Model B.....	1½	4-3½x5¼	Buda.....	22.5	132	34x5P	36x6	...
	Model B1.....	1½	4-3½x5¼	Buda.....	22.5	132	34x5P	36x6P	...
	Model A.....	2½	4-4½x5¾	Buda.....	28.9	150	36x4	36x7	...

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"Specifications"

Model	Capacity	Price	Motor	Size	Lubri- cation	Cool- ing	Radiator	Car- buretor	Ignition	Electric Start and Lighting	Clutch	Trans- mission	Univer- sals
Winther, 751	1 ton	\$1795	Her-Sp.	3 1/2 x 5	Force	T-S.	Tubular	Stromberg	Willard	West	Warner	Warner	Peters
Winther, 39	1 1/2 ton	2450	Wis.	3 1/2 x 5	Force	Pump	Tubular	Stromberg	Eisemann	No.	Fuller	Fuller	Peters
Winther, 49	2 ton	3250	Wis.	4 x 5	Force	Pump	Tubular	Master	Eisemann	No.	Borg & Beck	B-Lipe	Blood
Winther, 50	2 1/2 ton	3695	Wis.	4 x 6	Force	Pump	Tubular	Master	Eisemann	No.	Fuller	B-Lipe	Blood
Winther, 70	3 1/2 ton	4200	Wis.	4 x 6	Force	Pump	Tubular	Master	Eisemann	No.	Borg & Beck	B-Lipe	Blood
Winther, 109	5 ton	5250	Wis.	4 1/2 x 6	Force	Pump	Tubular	Master	Eisemann	No.	Borg & Beck	B-Lipe	Blood
Winther, 140	7 ton	5900	Wis.	5 x 6	Force	Pump	Tubular	Master	Eisemann	No.	Borg & Beck	B-Lipe	Blood
Winther, 430 (four-wheel-drive)	1 1/2 ton	2850	Wis.	3 1/2 x 5	Force	Pump	Tubular	Stromberg	Eisemann	No.	Fuller	Fuller	Peters
Winther, 450 (four-wheel-drive)	2 1/2 ton	3690	Wis.	4 x 5	Force	Pump	Tubular	Stromberg	Eisemann	No.	Fuller	Fuller	Peters

Model	Rear Axle	Frame	Springs	Steer- ing	Wheels	Tires	Wheel- base	Turning Radius	Weight	Body Allowance	Tread	Rec. Speed
Winther, 751	Torb., 6-6-1	5" channel	Detroit	Lavine	Wood	34x4 1/2 35x5 1/2	135"	21'	2700 lbs.	800 lbs.	56"	30 m.p.h.
Winther, 39	Medway, 7-1	6" channel	Detroit	Lavine	Metal	34x3 1/2 34x5	140"	28'	3700 lbs.	1000 lbs.	56"	18 m.p.h.
Winther, 49	Clark, 8-1	7" channel	Mather	Ross	Metal	34x4 34x4d	147"	29'	5700 lbs.	1200 lbs.	56"	17 m.p.h.
Winther, 50	Clark, 9-1	7" channel	Mather	Ross	Metal	36x6 42x9	110"	21'	5900 lbs.	1500 lbs.	56"	17 m.p.h.
Winther, 70	Clark, 9-1	7" channel	Mather	Ross	Metal	36x5 36x5d	150"	32 1/2'	6400 lbs.	1600 lbs.	67" 70"	16 m.p.h.
Winther, 109	Clark, 11-1	9" channel	Mather	Ross	Metal	36x6 40x6d	162"	33'	8600 lbs.	2000 lbs.	69" 65"	12 m.p.h.
Winther, 140	Clark, 11-1	9" channel	Mather	Ross	Metal	36x6 40x7d	162"	33'	9500 lbs.	2500 lbs.	69" 65"	10 m.p.h.
Winther, 430 (four-wheel-drive)	Medway, 7-1	6" channel	Detroit	Lavine	Metal	32x4 32x4	132"	30'	4125 lbs.	1000 lbs.	56"	17 m.p.h.
Winther, 450 (four-wheel-drive)	Clark, 9-1	6" channel	Mather	Lavine	Metal	34x4 36x6	150"	32'	4300 lbs.	1350 lbs.	56"	15 m.p.h.

Regular equipment includes side and tail light, seat, tools, jack and painting in dark Brewster Green with light green running gear. We can promptly supply cabs, bodies, hoists, winches, electrical equipment, pneumatic tires, etc., at a moderate additional charge.

WINTHER MOTORS, Inc.

Manufacturers of Motor Trucks and Motor Cars
KENOSHA, WISCONSIN

WINTHER MOTOR TRUCKS

Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Lbs. Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheels	Size of Tires		Price
							Front	Rear	
Atlas.....	Atlas Truck Corp., York, Pa. Model 31.....	1	4-3½x5	Lycoming.....	19.6	130	32x4½P	32x4½P	....
Atterbury..... See page 47	Atterbury Motor Car Co., Buffalo, N. Y. Model 30 R..... Model 7 CK..... Model 7 D..... Model 8 E.....	1½ 2½ 3½ 5	4-3½x5 4-4½x5½ 4-4½x5½ 4-4½x5	Continental..... Continental..... Continental..... Continental.....	22.5 27.2 32.4 36.1	144 153½ 171 167½	34x3½ 36x4 36x5 36x5	34x5 36x4D 40x5D 40x5D	2475 3175 3975 4975
Autocar.....	Autocar Co., Lancaster Ave., Ardmore, Pa. Model XXI-F..... Model XXI-G..... Model XXVI-Y..... Model XXVI-B..... Model Y..... Model B.....	3 3 3½ 3½ 5 5	3-4½x4½ 3-4½x4½ 4-4½x5½ 4-4½x5½ 4-4½x5½ 4-4½x5½	Own..... Own..... Own..... Own..... Own..... Own.....	18.1 18.1 28.9 28.9 28.9 28.9	97 130 130 166	34x4P 34x4 34x5 34x5 34x6 34x6	34x5P 34x5 36x10 36x10 36x12 36x12	3900 3400 4350 4500 4500 4500
Available.....	Available Truck Co., 1539 N. Kilpatrick Ave., Chicago, Ill. Model H1¼..... Model H2¼..... Model H3¼..... Model H5.....	1½ 2½ 3½ 5	4-1x5½ 4-1x5½ 4-1½x5½ 4-4½x5	Heracles..... Heracles..... Heracles..... Heracles.....	26.6 25.6 32.4 36.1	145 162 176 168	36x2½ 36x4 36x5 36x6	36x5 36x5 40x5D 40x12	29450 2475 4475 5375
Avery.....	Avery Co., 949 Laws St., Peoria, Ill. Model I.....	1½	6-3x4	Own.....	31.6	130	34x5	34x5	.....
Beck.....	Beck-Hawkeye Motor Truck Works, 901-13 First Ave. W., Cedar Rapids Iowa. Model A Jr. 30..... Model A 30..... Model B 30..... Model C 40..... Model D 50.....	 1½ 1½ 1½ 2½	4-3½x5 4-3½x5 4-3½x5 4-3½x5 4-4½x5½	Herschell-Spill..... Herschell-Spill..... Continental..... Herschell-Spill..... Continental.....	19.6 19.6 22.5 22.5 27.2	123 132 132 144 144	32x4½P 32x4½P 36x6 36x6 38x7	32x5P 32x5P 36x6 36x6 40x5	3300 1960 1960 2575 3160
Bell.....	Iowa Motor Truck Co., Madison Ave., Ottumwa, Iowa Model M..... Model E..... Model O.....	1 1½ 2½	4-3½x5½ 4-3½x5½ 4-4½x5½	Buda..... Buda..... Buda.....	21.0 22.5 28.9	120 136 146	35x5P 34x3½ 34x4	35x5P 34x5 34x6	1650 2250 2750
Bell.....	Bell Motor Car Co., Central St. & P.R.R., York Pa. Model.....	¾	4-3½x4½	G.B. & S.....	22.5	115	31x4P	31x4P	1150
Belmont.....	Belmont Motors Corp., Union Trust Bldg., Harrisburg, Pa. Model B..... Model D..... Model F.....	1 2 3	4-3½x5½ 4-4½x5½ 4-4½x5½	Buda..... Buda..... Buda.....	21.0 28.9 30.4	3 135 144 162	4x4SP 35x5P 38x7P	35x5P 38x7P 42x9P	1900 2575 3500
Bessemer.....	Bessemer Motor Truck Co., Grove City, Pa. Model G..... Model H-2..... Model J-2..... Model K-2.....	1 1½ 2½ 4	4-3½x5 4-3½x5 4-4½x5½ 4-4½x5½	Continental..... Continental..... Continental..... Continental.....	19.6 22.5 27.2 32.4	124 144 158 175	34x3 36x3½ 36x4 36x5	34x4 36x5 38x4D 36x5D	1395 1995 2595 3495
Birch.....	Birch Motor Cars, 301 N. Michigan Ave., Chicago, Ill. Model 9..... Model 310.....	1 ½	4-3½x5 4-3½x4½	Herschell-Spill.....	19.6 15.6	132 Opt.	32x3½ 30x3½P	32x4 30x3½P	1285 725
Brinton.....	Brinton Motor Truck Co., 5805 Market St., Philadelphia, Pa. Model F.....	2½	4-4½x5½	Continental.....	27.2	156	36x4	36x7	3400
Brockway..... See page 39	Brockway Motor Truck Co., Cortland, N. Y. Model I..... Model S-4..... Model K-5..... Model R-4..... Model T.....	1 1½ 2½ 3½ 5	4-3½x5½ 4-3½x5 4-4½x5½ 4-4½x5½ 4-4½x6	Buda..... Continental..... Continental..... Continental..... Continental.....	22.5 22.5 27.2 32.4 36.1	135 140 153 164 174	35x5P 36x3½ 36x4 36x5 36x6	35x5P 36x5 36x5 36x10 40x12	1675 2250 3200 4100 4750
Case, J. L.....	Case Plow Works, Sixth & Mead Sts., Racine, Wis.	2	4-4½x5½	Own.....	28.9	144	36x6P	38x7P	.....
Champion.....	Champion Motors Corp., Harrison Bldg., Philadelphia, Pa. Model ½.....	¾	4-3½x5	Lycoming.....	19.6	113	32x3½P	32x3½P	1195
Chevrolet.....	Chevrolet Motor Co., Gen. Motors Bldg., Detroit, Mich. Model T..... Model G..... Model 400.....	1 ¾ ½	4-3½x5½ 4-3½x4 4-3½x4	Own..... Own..... Own.....	21.7 21.7 21.7	125 120 102	33x4P 31x4P 30x3½P	35x5P 34x4½P 30x3½P	1925 830 680

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Traffic "Express"

\$1695

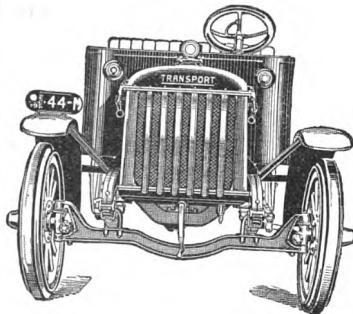
Complete with pneumatic cord tires. Electric Starting and Lighting Equipment

Maximum capacity, 3,000 lbs.; wheel base, 128 inches; loading space, 8 feet long, 44 inches wide; turn radius, 22 feet; full length top with roll up curtains; Continental "Red Seal" 3¼x5 motor; Bosch magneto; Russel internal gear drive rear axle; Covert transmission; multiple disc clutch; Carter carburetor; Gray & Davis starting and lighting system; Detroit Steel Products springs; Radiator, cellular type; Disc wheels with demountable rims; Fisk Standard Cord tires; 18-inch steering wheel, worm and gear type; Forged I-beam front axle, Timken roller bearings in wheels; Traffic made U-channel frame; 177¼ inches long over all; Traffic-made pressed steel gasoline tank, dash and hood.

Traffic Motor Truck Corp.
St. Louis, U. S. A.

TRANSPORT TRUCKS

Internal Gear Drive



Model 20—1-ton	\$1850
Model 30—1½-ton	2250
Model 50—2½-ton	2785
Model 70—3½-ton	4195

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The Truck of Good Service

Motor—Continental, 3¼" x 5" stroke, Thermo-Syphon cooled.
Ignition—Two unit Starting, Lighting and Ignition system—
together with Magneto and storage battery.
Rear Axle—Russell Internal Gear Drive.
Wheelbase—140 inches.
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1½ Ton Truck

THE AMERICAN COMMERCIAL CAR CO., Detroit, Mich.

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N. A. C. C. H. P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Chicago.....	Chicago Motor Truck, 335 W. 28th Pl., Chicago, Ill.	1 1/2	4-3 1/2 x 5 1/4	Heracles	22.5	144	36x3 1/2	36x5	.....
	Model C1 1/2	2 1/2	4-4 x 5 1/2	Heracles	25.6	156	36x4	36x7	.....
	Model C2 1/2	3 1/2	4-4 1/2 x 5 1/2	Heracles	32.4	156	36x5	36x10	.....
	Model C3 1/2	5	4-4 1/2 x 5 1/2	Heracles	32.4	156	36x6	40x12	.....
	Model D5	1 1/2	4-3 1/2 x 5	Hershell-Spill	19.6	146	36x5	37x8	\$2450
Climber.....	Climber Motor Corp., 207 W Markham St., Little Rock, Ark.	1 1/2	4-3 1/2 x 5	Hershell-Spill	19.6	146	36x5	37x8	\$2450
	Model A-20	1 1/2	4-3 1/2 x 5	Hershell-Spill	19.6	146	36x5	37x8	\$2450
Clydesdale..... See page 43	Clydesdale Motor Truck Co., Clyde, Ohio	3/4	4-3 1/2 x 5	Continental	22.5	136	34x5P	34x5P	.....
	Model 18	1	4-3 1/2 x 5	Continental	22.5	144	34x5P	34x5P	.....
	Model 20	1 1/2	4-3 1/2 x 5	Continental	22.5	144	34x5P	34x5P	.....
	Model 42	1 1/2	4-3 1/2 x 5	Continental	22.5	144	34x5P	34x5P	.....
	Model 120B	5	4-4 1/2 x 5 1/2	Continental	32.4	170	36x6	40x12	.....
Collier.....	Collier Motor Truck Co., Bellevue, Ohio.	1	4-3 1/2 x 5	Continental	19.6	140	34x4	34x5	2350
	Model 18	1 1/2	4-3 1/2 x 5	Continental	22.5	144	36x4	36x6	2550
	Model 19	2	4-4 1/2 x 5 1/2	Continental	27.2	152	36x4	36x7	2950
	Model 21	2 1/2	4-4 1/2 x 5 1/2	Continental	27.2	165	36x4	36x8 D	3150
	Model 22	2 1/2	4-4 1/2 x 5 1/2	Continental	27.2	165	36x4	36x8 D	3150
Columbia..... See page 45	Columbia Motor Truck Co., Pontiac, Mich.	1 1/2	4-3 1/2 x 5	Continental	22.5	126	35x5P	36x6	1850
	Model F	2 1/2	4-4 x 5 1/2	Hinkley	25.6	149	36x4	36x7	2850
Comet.....	Comet Automobile Co., 875-79 Garfield Ave., Decatur, Ill.	1 1/2	4-3 1/2 x 5	Lycoming	19.6	130	34x4P	34x4	1950
	Model 11 1/2	1 1/2	4-3 1/2 x 5	Lycoming	19.6	130	34x4P	34x4	1950
Commerce..... See page 41	Commerce Motor Car Co., Detroit, Mich.	3/4	4-3 1/2 x 5	Continental	22.5	127	34x4 1/2 P	34x4 1/2 P	1450
	Model T	1 1/2	4-3 1/2 x 5	Continental	22.5	130	35x5	35x5	1800
	Model 12	2	4-3 1/2 x 5	Continental	22.5	137	36x6	36x6	2150
	Model 16	2	4-3 1/2 x 5	Continental	22.5	137	36x6	36x6	2150
Concord.....	Abbot-Downing Truck & Body Co., S. Main St., Concord, N. H.	1 1/2	4-4 x 5 1/2	Buda	25.6	140	36x3 1/2	36x5	3000
	Model A	1 1/2	4-4 x 5 1/2	Buda	25.6	140	36x3 1/2	36x5	3100
	Model A-X	2 1/2	4-4 1/2 x 5 1/2	Buda	28.9	150	36x4	36x8	3400
	Model B	2 1/2	4-4 1/2 x 5 1/2	Buda	28.9	170	36x4	36x8	3400
	Model B-X	2 1/2	4-4 1/2 x 5 1/2	Buda	28.9	170	36x4	36x8	3400
Corbitt.....	Corbitt Motor Truck Co., Henderson, N.C.	1	4-3 1/2 x 5	Continental	22.5	138	35x5P	35x5P	1800
	Model H	1	4-3 1/2 x 5	Continental	22.5	134	34x3 1/2	34x4	2200
	Model E	1 1/2	4-3 1/2 x 5	Continental	22.5	144	36x3 1/2	36x5	2600
	Model D	2	4-4 1/2 x 5 1/2	Continental	27.2	148	36x4	36x7	3150
	Model B	2 1/2	4-4 1/2 x 5 1/2	Continental	27.2	152	36x4	36x7	3300
	Model A	3 1/2	4-4 1/2 x 5 1/2	Continental	32.4	178	36x5	36x10	4100
	Model A-A	5	4-4 1/2 x 6	Continental	36.1	178	36x6	40x6D	4500
Couple-Gear.....	Couple-Gear Electric Truck Co., 1450 Buchanan Ave., Grand Rapids, Mich.	3 1/2	4-5 1/2 x 6	Wisconsin	42.0	144	36x4	36x4	6100
	Model A	5	4-5 1/2 x 7	Wisconsin	42.9	144	36x5	36x5	6700
	Model L	7	4-5 1/2 x 7	Wisconsin	52.9	144	36x6	36x6	7450
	Model D	7	4-5 1/2 x 7	Wisconsin	52.9	144	36x6	36x6	7450
Day-Elder.....	Day-Elder Motors Corp., 20 Colt St., Irvington, N. J.	1	4-3 1/2 x 5	Continental	22.5	128	34x3 1/2	34x4	2100
	Model A	1 1/2	4-3 1/2 x 5	Continental	22.5	144	34x3 1/2	34x5	2300
	Model B	2	4-4 1/2 x 5 1/2	Continental	27.2	144	36x4	36x7	2750
	Model C	3 1/2	4-4 1/2 x 5 1/2	Buda	28.9	150	36x4	36x7	3025
	Model F	3 1/2	4-4 1/2 x 5 1/2	Continental	32.4	165	36x5	36x5D	3750
	Model E	5	4-4 1/2 x 6	Buda	32.4	162	36x5	40x6D	4250
	Model E	5	4-4 1/2 x 6	Buda	32.4	170	36x5	40x6D	4250
Dearborn.....	Dearborn Truck Co., 2011-15 Indiana Ave., Chicago, Ill.	2	4-3 1/2 x 5 1/2	Buda	22.5	148	34x4 1/2 P	34x7	2500
	Model F-X	1 1/2	4-3 1/2 x 5 1/2	Buda	22.5	138	34x4	34x5	2300
	Model F	1 1/2	4-3 1/2 x 5 1/2	Buda	22.5	138	34x4	34x5	2180
	Model E	1	4-3 1/2 x 5 1/2	Buda	21.0	133	35x5P	35x5P	1600
	Model E	1	4-3 1/2 x 5 1/2	Buda	21.0	133	35x5P	35x5P	1600

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There are no weak spots in the TRIANGLE.

It sells easily, and stays sold because it continues to give dependable service under the most adverse conditions.

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Dependable Truck & Tractor Co.
Galesburg
Illinois

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Defiance.....	Defiance Motor Truck Co., Seneca St., Defiance, Ohio								
	Model D.....	1½	4-3½x5	Highway.....	22.5	140	35x5	36x6	\$2095
	Model E.....	2	4-3½x5	Highway.....	22.5	140	35x5	38x7	2275
	Model G.....	1	4-3½x5	Highway.....	22.5	128	35x5	35x5	1695
Denby..... See page 41	Denby Motor Truck Co., Detroit, Mich.								
	Model 31.....	1	4-3½x5	Gray-Beall.....	19.6	130	35x5P	35x5P	1625
	Model 33.....	1½	4-3½x5	Continental.....	22.5	136	35x5P	38x7	2300
	Model 34.....	2	4-3½x5	Continental.....	22.5	144	36x3½	36x6	2660
	Model 25.....	3	4-4½x5½	Continental.....	27.2	150	36x4	36x7	3300
	Model 27.....	4	4-4½x5½	Continental.....	32.4	170	36x5	36x5D	.....
	Model 210.....	5	4-4½x5½	Continental.....	32.4	170	36x6	40x6D	.....
Dependable..... See page 41	Dependable Truck & Tractor Co., Galesburg, Ill.								
	Model A.....	¾	4-3½x5½	Buda.....	21.0	120	35x5	36x6	1725
	Model C.....	1½	4-3½x5½	Buda.....	22.5	150	34x4	34x5	2350
	Model E.....	2½	4-4½x5½	Buda.....	28.9	165	36x4	38x7	2950
	Model G.....	3½	4-4½x6	Buda.....	32.4	170	36x6	36x10	3550
Diamond T.....	Diamond T. Motor Car Co., 4517 W. 26th St., Chicago, Ill.								
	Model O.....	3	4-3½x5½	Hinkley.....	22.5	132	36x3½	36x4	1975
	Model F8.....	1½	4-3½x5½	Hinkley.....	22.5	144	36x3½	36x5	2960
	Model T.....	1½	4-3½x5½	Hinkley.....	22.5	144	36x3½	36x5	2650
						154			
	Model U.....	2	4-4 x5½	Hinkley.....	25.6	160	36x4	36x7	3285
	Model K.....	3½	4-4½x5½	Hinkley.....	28.9	170	36x5	36x5D	4675
	Model EL.....	5	4-4½x5½	Hinkley.....	32.4	170	36x6	40x6D	5400
						180			
	Model S.....	5	4-4½x6	Hinkley.....	36.1	170	36x6	40x6D	5650
						180			
Dispatch.....	Dispatch Motor Car Co., 1200-14th Ave., S. E., Minneapolis, Minn.								
	Model G.....	1	4-3½x5	Wisconsin.....	16.9	120	34x4P	34x4P	.....
Doane.....	Doane Motor Truck Co., 428 Third St., San Francisco, Cal.								
	Model.....	2½	4-4½x5½	Waukesha.....	28.9	147	36x5	36x7	4100
	Model.....	3½	4-4½x5½	Waukesha.....	30.6	172	36x5	36x10	5100
	Model.....	6	4-5 x6½	Waukesha.....	40.0	178	36x6	40x12	6000
Dodge..... See page 21	Dodge Brothers, Detroit, Mich.								
	Model..... lbs.	1000	4-3½x4½	Own.....	24.0	114	33x4P	32x4P	885
Dorris.....	Dorris Motor Car Co., 4100 Laclede Ave., St. Louis, Mo.								
	Model K-4.....	2½	4-4½x5½	Own.....	28.9	144	36x4	36x7	3400
						162			
	Model K-7.....	3½	4-4½x5½	Own.....	28.9	154	36x5	36x10	4400
						174			
						194			
Double Drive.....	Double Drive Truck Co., 4826 W. Kinzie St., Chicago, Ill.								
	Model Four Wheel Drive B.....	3	4-4½x5½	Buda.....	28.9	130	36x6	36x6	4000
	Model Front Wheel Drive C.....	1½	4-3½x5½	Buda.....	22.5	Opt.	34x5	34x4	2800
Douglas.....	Douglas Motors Corp., 30th & Sprague Sts., Omaha, Neb.								
	Model GW.....	1½	4-3½x5½	Weidely.....	22.5	130	34x3½	34x5	.....
	Model G.....	1½	4-3½x5½	Buda.....	22.5	130	34x3½	34x5	.....
	Model H.....	2	4-4½x5½	Buda.....	28.9	136	34x4	36x7	.....
	Model I.....	3	4-4½x5½	Buda.....	28.9	138	36x5	36x8	.....
Duplex.....	Duplex Truck Co., Washington & Mt. Hope Aves., Lansing, Mich.								
	Model A.....	1½	4-4 x5½	Hinkley.....	25.6	145	35x5P	38x7P	2775
	Model E.....	3½	4-4½x5½	Buda.....	28.9	130	36x8	36x8	4250
	Model EL.....	3½	4-4½x5½	Buda.....	28.9	160	36x8	36x8	4250
Erie.....	Erie Motor Truck Mfg. Co., Pearl & Wag- ner Aves., Erie, Pa.								
	Model A.....	2½	4-4½x5½	Buda.....	28.9	150	36x6P	36x8P	.....
							36x4	36x4D	.....
F. W. D.....	Four Wheel Drive Auto Co., Clintonville, Wis.								
	Model B.....	3	4-4½x5½	Wisconsin.....	36.1	124	36x6	36x6	4200

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Selling truck-transportation has come to mean the sale of a dependable truck unit plus the assured responsibility and stability of the maker.

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You will find it in the Federal.

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The marvelous BIG little device drives Clydesdale Trucks at a uniform speed uphill and down and over any kind of a road.

And the driver doesn't need to do a thing but steer!

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INDIANA TRUCKS

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Capacities: 1½—2—2½—3½—5 Tons

GARY

the 10-Test Truck

The Truck That Meets Your Requirements

Five Models

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Gary Motor Truck Co.
GARY, IND.

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Lbs., Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Fageol.....	Fageol Motors Co., 107th Ave. & Hollywood Blvd., Oakland, Cal.								
	Model.....	1½	4-3½x5½	Waukesha.....	22.5	136	34x3½	34x6	3000
	Model.....	2½	4-4½x5½	Waukesha.....	28.9	144	34x4	36x7	3900
	Model.....	3½	4-4½x6½	Waukesha.....	32.4	154	36x5	36x5D	6000
	Model.....	5	4-4½x6½	Waukesha.....	32.4	164	36x6	40x6D	5700
Fargo.....	Fargo Motor Co., 1162-64 W. 22d St., Chicago, Ill.	2	4-3½x5	Continental.....	22.5	140	36x4	36x6	.....
Federal.....	Federal Motor Truck Co., Federal & Campbell Sts., Detroit, Mich.								
	Model SD.....	1-1½	4-3½x5	Continental.....	22.5	132	35x5P	36x6P	\$2500
	Model TE.....	1½-2	4-4½x5½	Continental.....	27.2	144	36x3½	36x5	2725
	Model UE.....	2-2½	4-4½x5½	Continental.....	27.2	156	36x4	36x7	3025
	Model WS.....	3½-4	4-4½x5½	Continental.....	32.4	156	36x5	36x5D	3950
	Model XZ.....	5-6	4-4½x6	Continental.....	36.1	156	36x6	40x6D	5350
Ford.....	Ford Motor Co., of Delaware (Highland Park), Detroit, Mich.								
	Model T.....	1	4-3½x4	Own.....	22.5	124	30x3½	32x4	445
Forschler.....	Forschler Motor Truck Mfg. Co., 120-28 N. Claiborne Ave., New Orleans, La.								
	Model A.....	1	4-3½x5	Continental.....	19.6	120	34x3	34x4	.....
	Model C.....	1½	4-4½x5½	Continental.....	19.6	120	36x3½	36x5	.....
	Model D.....	2	4-4½x5½	Continental.....	27.2	144	36x4	36x7	.....
	Model BX.....	3	4-4½x5½	Continental.....	27.2	144	36x4	36x8	.....
Frisbee.....	Frisbee Truck Co., Webberville, Mich.								
	Model A.....	2½	4-4½x5½	Continental.....	27.2	144	34x4	36x7	2850
Fulton.....	Fulton Motors Corp., 240 W. 59th St., New York, N. Y.								
	Model A.....	1	4-3½x5	Own.....	19.6	130	35x5P	35x5P	.....
	Model C.....	2	4-3½x5	Own.....	19.6	137	34x4	34x6	.....
G. M. C.....	General Motors Truck Co., Pontiac, Mich.								
	Model K16.....	1	4-3½x5½	Own.....	19.6	132	33x4½	33x4½	1495
	Model K41.....	2	4-4x5½	Own.....	25.6	146	36x4	36x7	3000
	Model K71.....	3½	4-4½x6	Own.....	32.4	163	36x5	36x5D	4250
	Model K101.....	5	4-4½x6	Own.....	32.4	187	36x5	36x6D	4650
Garford.....	Garford Motor Truck Co., Wapak Rd., Lima, Ohio.								
	Model 15.....	¾	4-3½x5½	Buda.....	21.0	132	34x5	34x5	1500
	Model 25B.....	1½	4-3½x5½	Buda.....	22.5	135	36x3½	36x4	2060
	Model 70 B.....	2	4-4½x5½	Buda.....	28.9	144	36x4	36x7	3100
	Model 77-D.....	3½	4-4½x6	Buda.....	32.4	162	36x5	36x5D	4300
	Model 68D.....	5	4-5 x6½	Buda.....	40.0	162	36x6	40x6D	5200
	Model 150A.....	7½	4-5x6½	Buda.....	40.0	162	36x6	40x7	5500
Gary.....	Gary Motor Truck Co., Gary, Ind.								
	Model FT.....	1	4-3½x5	Buda.....	22.5	130	36x3½	36x4	2100
	Model I.....	1½	4-4x5½	Buda.....	25.6	144	36x3½	36x5	2550
	Model J.....	2½	4-4½x5½	Buda.....	28.9	175	36x4	36x7	3150
	Model KT.....	3½	4-4½x6	Buda.....	32.4	162	36x5	40x5D	4050
	Model M.....	5	4-5 x6½	Buda.....	40.0	182	36x6	40x6D	5150
Gernix.....	Gernix Mfg. Co., 800-04 Fairview Ave. N., Seattle, Wash.								
	Model K.....	2½	4-4½x5½	Buda.....	28.9	150	36x4	36x7	.....
	Model M.....	1½	4-4x5½	Buda.....	25.6	142	36x3½	36x6	.....
	Model L.....	3½	4-4½x6½	Buda.....	32.4	170	36x5	40x12	.....
Giant.....	Giant Truck Corp., Chicago Heights, Ill.								
	Model 15 A.....	1½	4-3½x5	Continental.....	22.5	138	34x3½	34x5	2200
	Model 16.....	2	4-4½x5½	Continental.....	27.2	168	36x4	36x7	3000
	Model 16.....	2½	4-4½x5½	Continental.....	27.2	144	36x4	36x7	3100
	Model 17.....	3½	4-4½x5½	Continental.....	32.4	176	36x5	36x5D	4100

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engines	Make of Engine	N.A.C.C. H.P.	Wheebase	Size of Tires		Price
							Front	Rear	
Graham.....	Graham Bros., Evansville, Ind. Model (Speed Truck).....	1	4-3½x5	Continental.....	23.5	133	35x5P	36x6	.....
Gramm-Bernstein.....	Gramm-Bernstein Motor Truck Co., Lima, Ohio.	1½	4-3½x5	Continental.....	23.5	138	36x2½	36x5	\$2735
	Model 15.....	1½	4-3½x5	Continental.....	23.5	138	36x2½	36x5	3050
	Model 20.....	2	4-4½x5½	Continental.....	27.2	144	36x4	36x7	3175
	Model 25.....	2½	4-4½x5½	Hinkley.....	28.9	150	36x4	36x8D	3675
	Model 35.....	3½	4-4½x5½	Hinkley.....	32.4	156	36x5	40x5D	4375
	Model 50.....	5	4-4½x5½	Continental.....	36.	168	36x6	40x8D	5275
	Model 30.....	3	4-4½x5½	Hinkley.....	32.4	150	36x5P	42x9	4575
	Model 10 (Speed Truck).....	1	4-3½x5	Lycoming.....	19.	139	32x5P	32x5P	1495
Hahn.....	Hahn Motor Truck Co., Third and Fourth Sts., Hamburg, Pa.	1	4-3½x5	Continental.....	23.5	132	34x5P	34x5P	.....
	Model J4.....	1½	4-4½x5½	Continental.....	27.2	145	36x6P	36x8P	.....
	Model C. D.....	2	4-4½x5½	Continental.....	27.2	145	36x6P	36x7	.....
	Model E. E.....	2½	4-4½x5½	Continental.....	32.4	152	36x6P	36x8	.....
	Model F.....	3½	4-4½x5½	Continental.....	32.4	191	36x6	40x10	.....
	Model F. E.....	5	4-4½x5½	Continental.....	36.1	193	36x6	40x12	.....
Hal-Fur.....	Hal-Fur Motor Truck Co., 1785 E. 21st Street, Cleveland, Ohio	2½	4-4½x5½	Hinkley.....	28.9	168	35x5	36x7	3250
	Model B.....	1	4-4 x5½	Hinkley.....	25.6	136	35x5	35x5	2350
	Model E.....	3½	4-4½x5½	Hinkley.....	32.4	180	36x5	40x10	4250
Hall.....	Lewis-Hall Motors Corp., 6930 W. Jefferson St., Detroit, Mich.	2½	4-4½x5½	Continental.....	27.2	144	36x4	36x4 D	3275
	Model.....	3½	4-4½x5½	Continental.....	32.4	144	36x5	36x5 D	4100
	Model (Worm).....	5	4-4½x5½	Continental.....	32.4	Opt.	36x5	40x6 D	5100
	Model (Chain).....	7	4-4½x5½	Continental.....	32.4	Opt.	36x5	40x6 D	5100
	Hamilton Motors Co.—See Apex.								
	Hare's Motors.—See Kelly-Springfield.								
	Harriburg Mfg. & Boller Co.—See Hurlbut.								
Harroun.....	Harroun Motors Corp., Wayne, Mich. Model A. A.....	1½	4½x5½	Own.....	16.9	106	31x4P	31x4P	.....
Harvey.....	Harvey Motor Truck Co., 153th St., Harvey, Ill.	1½	4-4½x5½	Buda.....	27.2	128	34x3½	34x5	2550
	Model W. E. A.....	1½	4-4½x5½	Buda.....	27.2	128	34x3½	34x5	2550
	Model W. F. A.....	2½	4-4½x5½	Buda.....	28.9	150	36x4	36x7	3300
	Model W. H. A.....	3½	4-4½x5½	Buda.....	32.4	160	36x5	36x8D	3550
	Model W. K. A.....	5	4-4½x5½	Buda.....	32.4	160	36x6	40x8D	4500
Hawkeye.....	Hawkeye Truck Co., Sioux City, Iowa.	1½	4-3½x5½	Buda.....	22.5	148½	34x3½	34x5	.....
	Model K.....	2	4-4½x5½	Buda.....	28.9	148½	36x4	36x6	.....
	Model M.....	3½	4-4½x5½	Buda.....	32.4	174	36x5	36x10	.....
Hewitt-Ludlow.....	Hewitt-Ludlow-Auto Co., 901-51 Indiana St., San Francisco, Cal.	2	4-4½x5½	Buda.....	27.2	140	36x4	36x6	.....
	Model.....	2½	4-4½x5½	Buda.....	28.9	150	36x4	36x7	.....
	Model.....	3½	4-4½x5½	Buda.....	28.9	156	36x5	36x8D	.....
	Model.....	5	4-4½x5½	Buda.....	32.4	168	36x6	40x8D	.....
Higdon.....	Higdon Motors Co., Harbor Springs, Mich. Model A17.....	¾	4-3½x5	Continental.....	22.5	115	32x4½P	32x4½P	1850
	Model A-18.....	1	4-3½x5	Continental.....	22.5	115	35x5	35x5	2100
	Model B-30.....	1½	4-4½x5½	Continental.....	27.2	180	35x4	36x6	2500
Highway-Knight.....	Highway Truck Corp., 100 W. Garfield Bldg., Chicago, Ill.	4	4-4 x6	Sleeve-Valve.....	25.6	159	36x5	36x8D	.....
	Model A.....	5	4-4 x6	Sleeve-Valve.....	25.6	162	36x5	40x8D	.....
Hoover.....	Hoover Wagon Co., York, Pa. Model 15 B.....	¾	4-3½x5	Continental.....	19.6	120	32x4P	33x4½P	1625
	Model 20 A.....	1½	4-3½x5	Continental.....	19.6	132	34x4	33x5	2150
Huffman.....	Huffman Bros. Motor Co., Elkhart, Ind. Model C.....	1½	4-3½x5½	Buda.....	22.5	140	34x3½	34x6	1795
	Model B.....	1½	4-3½x5	Continental.....	22.5	140	34x3½	34x6	1995
	Model D.....	2½	4-4½x5½	Buda.....	28.9	156	36x4	36x7	2895

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price	
							Front	Rear		
Hurlburt	Harrisburg Mfg. & Boiler Co., 19th and Derry Sts., Harrisburg, Pa.									
	Model A.	1½	4-4½x5½	Buda.	25.0	148	34x4	34x5	\$2850	
	Model B.	2½	4-4½x5½	Buda.	28.9	170	36x4	36x4	3750	
	Model C.	3½	4-4½x6	Buda.	32.4	166	36x5	36x5D	4590	
	Model D.	5	4-4½x6	Buda.	32.4	170	36x5	40x6D	5500	
Independent (Ohio) ..	Independent Motor Co., 1636 Wilson Ave., Youngstown, Ohio.									
	Model F.	1½	4-3½x5	Continental.	22.5	140	36x3½	36x5	2585	
	Model H.	2½	4-4½x5½	Continental.	27.2	148	36x4	36x4D	3085	
	Model K.	3½	4-4½x5½	Continental.	32.4	160	36x5	36x5D	3985	
Independent (Iowa) ..	Independent Motor Truck Co., Second & Howell Sts., Davenport, Iowa.									
	Model B.	1	4-3½x5	Continental.	19.6	135	34x5	36x6	....	
	Model G.	1½	4-3½x5	Continental.	22.5	141	34x3½	34x5	....	
	Model HI.	2½	4-4½x5½	Continental.	27.2	156	36x4	36x7	....	
Indiana (See page 43)	Indiana Truck Corp., Marion, Ind.									
	Model 12.	1½	4-3½x5½	Waukesha.	22.5	134	34x3½	34x5	....	
	Model 20.	2	4-4½x5½	Own.	27.2	150	36x4	36x7	....	
	Model 25.	2½	4-4½x5½	Own.	27.2	156	36x4	36x8	....	
	Model 35.	3½	4-4½x5½	Own.	30.6	160	36x5	36x5 D	....	
	Model 51.	5	4-5 x6½	Waukesha.	40.0	170	36x5	40x6 D	....	
International	International Harvester Co., Harvester Bldg., Chicago, Ill.									
	Model S (Speed Truck).	Lbs. 1500	4-3½x5	Lyc.	19.6	124	34x5P	34 x5P	1500	
	Model 21.	2000	4-3½x5½	Own.	19.6	115	36x3½	34x5	1750	
	Model 31.	3000	4-3½x5½	Own.	19.6	128	36x3½	36x4	1850	
	Model 41.	4000	4-3½x5½	Own.	19.6	146	36x3½	36x5	2100	
	Model 61.	6000	4-4½x5	Own.	28.9	138	36x4	36x6	2400	
	Model 101.	10000	4-4½x5	Own.	28.9	160	36x5	40x10	3600	
	Iowa Motor Truck Co. See Bell.					185			....	
	International Motor Co.—See Mack.									
Jackson	Jackson Motors Corp., Jackson, Mich. Model C.	Tons	3½	4-4½x5½	Continental.	32.4	150	36x7	36x7	4550
Jumble	Nelson Motor Truck Co., 1206 S. Jefferson Ave., Saginaw, Mich.									
	Model 15.	1½	4-3½x5½	Buda.	22.5	144	36x3½	36x5	2425	
	Model 20.	1½	4-3½x5½	Buda.	22.5	144	36x5	38x7	2675	
	Model 25.	2½	4-4½x5½	Buda.	28.9	152	36x4	36x7	3090	
	Model 30.	2½	4-4½x5½	Buda.	28.9	152	36x6P	42x6P	3590	
	Model 35.	3½	4-4½x6	Buda.	32.4	165	36x5	36x10	4080	
	Model 40.	3½	4-4½x6	Buda.	32.4	165	38x7P	44x10P	4730	
Kalamazoo	Kalamazoo Motors Corp., Kalamazoo, Mich.									
	Model G1.	1½	4-3½x5	Continental.	22.5	144	34x4	35x5	2495	
	Model G2.	1½	4-4½x5	Continental.	22.5	144	36x4	36x5	2800	
	Model H.	2½	4-4 x6	Wisconsin.	25.0	160	36x4	36x8	3275	
	Model K.	3½	4-4½x6	Wisconsin.	28.9	160	36x4	36x5D	4000	
Kelly-Spring fld. See page 43	Hare's Motors, 342 Madison Ave., New York, N. Y.									
	Model K 31.	1½	4-3½x5½	Own.	22.5	144	36x3½	36x6	2900	
	Model K 34.	1½	4-3½x5½	Own.	22.5	144	36x3½	36x6	2900	
	Model K 35.	2½	4-3½x5½	Own.	22.5	144	36x4	36x4D	3250	
	Model K 38.	2½	4-3½x5½	Own.	22.5	150	36x4	36x4D	3250	
	Model K 40.	3½	4-4½x6	Own.	32.4	150	36x5	40x5D	4200	
	Model K 41.	3½	4-4½x6	Own.	32.4	156	36x5	40x5D	4200	
	Model K 42.	3½	4-4½x6	Own.	32.4	156	36x5	40x5D	4200	
	Model K 45.	4	4-4½x6½	Own.	32.4	150	36x5	40x6	4550	
	Model K 50.	5	4-4½x6½	Own.	32.4	158	36x5	40x5D	4900	
	Model K 60.	6	4-4½x6½	Own.	32.4	158	36x6	40x7D	5100	
	Kentucky Wagon Mfg. Co.—See Old Hickory.									

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capa- city, Tons	No. of Cyl- inders, Bore and Stroke of Engine	Make of Engine	N.A.A.C. H.P.	Wheels	Size of Tires		Price
							Front	Rear	
Keystone.....	Keystone Motor Truck Corp., Oaks, Pa. Model 40.....	3	4-3½x5½	Buda.....	22.5	144	34x5	38x7P	\$3450
Kimball.....	Kimball Motor Truck Co., 1700 E. Ninth St., Los Angeles, Cal. Model AB.....	3	4-4 x8	Wisconsin.....	25.6	Opt.	38x4	38x7	3675
	Model AC.....	2½	4-4½x8	Wisconsin.....	23.9	Opt.	38x4	38x8	3675
	Model AK.....	3	4-4½x8	Wisconsin.....	23.4	Opt.	38x4	38x10	4400
	Model AE.....	4	4-4½x8	Wisconsin.....	36.1	Opt.	38x5	40x12	4675
	Model AF.....	5	4-6 x8	Wisconsin.....	40.0	Opt.	38x5	40x17D	5675
Kinsel.....	Kinsel Motor Car Co., Hartford, Wis. 1-Ton Express..... lbs.	3000	4-3½x5½	Own.....	24.0	140	34x5	34x5	1585
	Model Gen. Utility..... lbs.	4100	4-3½x5½	Own.....	24.0	152	38x5½	38x5	2775
	Model Freight..... lbs.	6350	4-4½x5½	Own.....	23.9	168	38x4	38x7	3475
	Model Goliath..... lbs.	8600	4-4½x5½	Own.....	23.9	168	38x5	38x5D	4475
Kleiber.....	Kleiber Motor Truck Co., 11th & Folsom Sta., San Francisco, Cal. Model.....	1	4-4½x5½	Continental.....	27.2	130	34x5½	34x5	2600
	Model.....	1½	4-4½x5½	Continental.....	27.2	143	38x5½	38x5	3100
	Model.....	2	4-4½x5½	Continental.....	27.2	153	38x6	38x7	3600
	Model.....	2½	4-4½x5½	Continental.....	23.4	160	38x5	38x8	3950
	Model.....	3½	4-4½x5½	Continental.....	33.4	143	38x5	38x10	4600
	Model.....	5	4-5x5½	Buda.....	40.0	180	38x6	40x8D	5300
Knox.....	Knox Motors Association, Springfield, Mass. Model 35.....	10	4-5 x5½	Own.....	40.0	108½	38x4½	38x6D	6900
	Model 38.....	10	4-5 x5½	Own.....	40.0	108½	38x4	38x6D	6900
Koehler.....	Koehler Motors Corp., H. J., Llewellyn Ave., Bloomfield, N. J. Model D.....	1½	4-3½x5	Herschell-Spill.....	19.6	137	34x5½	34x5	1885
	Model M.....	2½	4-4 x5½	Hercules.....	25.6	160	38x4	38x7	2875
	Model M.C.S.....	2½	4-4x5½	Hercules.....	25.6	150	38x4	38x7	2975
	Model F.....	3½	4-4½x5½	Hercules.....	32.4	160	38x5	38x10	3985
	Model M. T.....	5	4-4 x5½	Hercules.....	35.6	129	38x4	38x7	2975
	La France Truck Co.—See Ward La France.								
Lange.....	Lange Motor Truck Co., Fifth & Hamilton Aves., Pittsburgh, Pa. Model B.....	2½	4-4½x5½	Continental.....	27.2	136	38x4	38x6	3000
Larrabee..... See page 47	Larrabee-Daye Motor Truck Co., Bing- hamton, N. Y. Model X2.....	1	6-3½x4½	Continental.....	25.3	138	34x5P	34x5P	1950
	Model J.....	1½	4-3½x5	Continental.....	22.5	138	34x3½	34x5	2480
	Model K4.....	2½	4-4½x5½	Continental.....	27.2	176	36x4	36x7	3280
	Model L4.....	3½	4-4½x5½	Continental.....	32.4	186	36x5	36x5D	4080
	Model W.....	5	4-4½x6	Continental.....	34.1	186	36x5	40x6D	4880
	Lewis-Hall Motors Corp.—See Hall.								
Luedinghaus.....	Luedinghaus Quality Motor Trucks, Broad- way, Howard to Mount Sta., St. Louis, Mo. Model K.....	2	4-4½x5½	Waukesha.....	28.9	145	38x4	38x7	2790
	Model W.....	1½	4-3½x5½	Waukesha.....	22.5	144	34x3½	34x5	2480
	Model C.....	1	4-3½x5	Herschell-Spill.....	19.6	130	38x5P	35x5P	1950
Luverne.....	Luverne Automobile Co., Maple & Mc- Kenzie Sts., Luverne, Minn. Model.....	2	4-3½x4½	G. B. & S.....	23.5	136	34x4	34x5	1900
	Model.....	3	6-3½x5½	Continental.....	39.4	180	38x5P	38x7P	3500
Maocar.....	Maocar Truck Co., Gilligan St., Scranton, Pa. Model L.....	1½	4-4½x5½	Continental.....	27.2	150	38x4	38x8	.....
	Model H2.....	2½	4-4½x5½	Continental.....	32.4	163	38x4	38x4 D	.....
	Model M2.....	3½	4-4½x5	Wisconsin.....	32.4	174	38x5	38x5 D	
	Model G.....	5	4-4½x6	Continental.....	36.1	186	38x5	40x8 D	

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Mack	International Motor Co., 282 W. 64th St., New York, N. Y.								
	Model AB (Chain).....	1½	4-4 x5	Own.....	25.6	144 162	36x4	36x3½D	\$3000
	Model AB (Chain).....	2	4-4 x5	Own.....	25.6	144 162	36x4	36x4 D	3300
	Model AB (Dual Rad.).....	1½	4-4 x5	Own.....	25.6	144 162	36x4	36x3½	3450
	Model AB (Dual Rad.).....	2	4-4 x5	Own.....	25.6	144 162	36x4	36x4	3750
	Model AB (Chain).....	2½	4-4 x5	Own.....	25.6	144 162	36x4	36x4 D	3400
	Model AB (Dual Rad.).....	2½	4-4 x5	Own.....	25.6	144 162	36x4	36x4 D	3850
	Model AC.....	3½	4-5 x6	Own.....	40.0	156 168 180	36x5	40x5 D	4950
	Model AC.....	5	4-5 x6	Own.....	40.0	156 168 180	36x6	40x6 D	5500
	Model AC.....	6½	4-5 x6	Own.....	40.0	156 168 180	36x6	40x12	5750
	Model AC.....	7½	4-5 x6	Own.....	40.0	156 168 180	36x7	40x7 D	6000
Master	Master Trucks, 3132-36 Wabash Ave., Chicago, Ill.								
	Model JW.....	1½	4-4½x5½	Buda.....	27.2	142	34x3½	34x5	2890
	Model D.....	2½	4-4½x5½	Buda.....	28.9	144	34x4	36x7	3540
	Model W.....	2½	4-4½x5½	Buda.....	28.9	144	34x4	36x7	3399
	Model WL.....	2½	4-4½x5½	Buda.....	28.9	170	34x4	36x7	3390
	Model DL.....	2½	4-4½x5½	Buda.....	28.9	170	34x4	36x7	3640
	Model A.....	3½	4-4½x6	Buda.....	32.4	158	36x5	40x5 D	4190
	Model AL.....	3½	4-4½x6	Buda.....	32.4	194	36x5	40x5 D	4390
	Model B.....	5	4-4½x6½	Buda.....	36.1	170	36x6	40x6 D	5390
	Model BL.....	5	4-4½x6½	Buda.....	36.1	194	36x6	40x6 D	5390
	Model F.....	5	4-4½x6½	Buda.....	36.1	170	36x6	40x6 D	5440
	Model FL.....	5	4-4½x6½	Buda.....	36.1	194	36x6	40x6 D	5440
Maxwell	Maxwell Motor Sales Corp., Detroit, Mich.								
See page 25	Model 1920.....	1½	4-3½x4½	Own.....	21.0	124	35x5P	35x5P	1495
Menominee	Menominee Motor Truck Co. of Wisconsin, Clintonville, Wis.								
	Model H. T.....	1	4-3½x5	Wisconsin.....	22.5	130	34x3½	36x5	2080
	Model H.....	1½	4-4 x5	Wisconsin.....	25.6	144	36x3½	36x5	2725
	Model D.....	2	4-4 x6	Wisconsin.....	25.6	144	36x4	36x8	3345
	Model G.....	3½	4-4½x6	Wisconsin.....	32.4	160	36x5	36x10	4370
	Model J-3.....	5	4-4½x6	Wisconsin.....	36.1	160	36x6	40x12	5450
Moreland	Moreland Motor Truck Co., 1701 N. Main St., Los Angeles, Cal.								
	Model 21 N.....	1	4-3½x5	Continental.....	22.5	133	35x5P	36x6P	.....
	Model 21 B.....	1½	4-4½x5½	Continental.....	27.2	126 150	36x3½	36x6	.....
	Model 21 C.....	2½	4-4½x5½	Continental.....	32.4	160 174	36x4	36x4D	.....
	Model 21 H.....	3½	4-4½x6	Continental.....	36.1	168 192	36x5	40x5D	.....
	Model 21 J.....	5	4-4½x6	Continental.....	36.1	168 192	36x6	40x6D	.....
Mutual	Mutual Truck Co., Sullivan, Ind.								
	Model 2B.....	2	4-4x6	Wisconsin.....	25.6	153	36x4	36x6	3490
	Model 2 B. P.....	3½	4-4x6	Wisconsin.....	25.6	153	36x7P	42x9P	4190

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capac- ity, Tons	No. of Cylin- ders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price.
							Front	Rear	
Napoleon.....	Napoleon Motors Co., W. Eighth St., Traverse City, Mich.								
	Model 9.....	1	4-3½x5	Gray (Victory)	19.6	133	35x5P	35x5P	1535
	Model 11.....	1½	4-3½x5	Gray (Victory)	19.6	133	35x5	36x8	1880
	Model 11D.....	1½	4-3½x5	Gray (Victory)	19.6	133	35x5	36x8	2507
Nash.....	Nash Motors Co., Kenosha, Wis.								
	Model 2018.....	1	4-3½x5½	Own.....	22.5	130	34x3	34x4	1885
	Model 2018.....	2	4-3½x5½	Own.....	22.5	144	34x6	34x6	2550
	Model (Quad).....	3	4-4½x8½	Buda.....	28.9	124	38x6	38x6	3250
	Model 5018.....	2½	4-3½x5½	Own.....	22.5	121	34x4	34x6	2550
	Nelson Motor Truck Co.—See Jumbo								
Nelson - LeMoore.....	Nelson - LeMoore, 249-45 N. Kedzie Ave., Chicago, Ill.								
	Model G1½.....	1½	4-4½x5½	Continental.....	27.2	Opt.	36x3½	36x6	.....
	Model G2½.....	2½	4-4½x5½	Continental.....	27.2	Opt.	36x4	36x7	.....
	Model G3½.....	3½	4-4½x5½	Continental.....	32.4	Opt.	36x5	36x8D	.....
	Model G5.....	5	4-4½x8	Continental.....	36.1	Opt.	36x6	40x6D	.....
	New England Truck Co.—See Netco.								
Netco.....	New England Truck Co., 86 Lanesburg St., Fitchburg, Mass.								
	Model D.....	2	4-4½x5½	Continental.....	27.2	150	36x4	36x7	.....
	Model H.....	2½	4-4½x5½	Continental.....	32.4	170	36x4	36x8	.....
New York.....	Tugstetter & Rippe Co., 771-73 First Ave., New York, N. Y.								
	Model M.....	1½	4-4½x5½	Continental.....	27.2	144	36x3½	36x5	.....
	Model N.....	2½	4-4½x5½	Continental.....	27.2	144	36x4	36x4 D	.....
Noble.....	Noble Motor Truck Corp., S. Main St., Kendallville, Ind.								
	Model B30.....	1½	4-3½x5½	Buda.....	22.5	186	36x3½	36x5	2400
	Model C40.....	3	4-4½x5½	Buda.....	25.6	148	36x4	36x7	2675
						150			
	Model D80.....	2½	4-4½x5½	Buda.....	28.9	162	36x4	36x8	2950
						176			
	Model E70.....	3½	4-4½x8	Buda.....	32.4	182	36x5	36x10	3800
						196			
Northway.....	Northway Motors Corp., 1 Beacon St., Boston, Mass.	3	4-4 x6	Own.....	25.6	146	36x6	36x4D	3400
	Model B3.....					161			
	Model B3½.....	3½	4-4 x6	Own.....	25.6	178	36x5	40x5D	4400
						180			
						185			
Northwestern.....	Star Carriage Co., 2401 First Ave., S. Seattle, Wash.								
	Model W.....	1½	4-4½x5½	Continental.....	27.2	136	34x4	36x6	2700
	Model W. S.....	2½	4-4½x5½	Continental.....	32.4	168	36x4	36x8	3500
Norwalk.....	Norwalk Motor Car Co., Martinsburg, W. Va.								
	Model 25 E.....	1	4-3½x5	Lycoming.....	19.6	130	34x4P	34x4	1665
	Model 25 E.....	1½	4-3½x5	Lycoming.....	19.6	143	34x3½	34x5	2025
	Model 25E (Special).....		4-3½x5½	Buda.....	22.5	143	34x3½	34x5	2285
Ok.....	Oklahoma Auto Mfg. Co., Okay, Okla.								
	Model.....	1½	4-4 x5½	Buda.....	25.6	150	36x3½	36x5	2675
	Model.....	2½	4-4½x5	Buda.....	28.9	154	36x4	36x8	3450
	Model.....	3½	4-4½x8	Buda.....	32.4	168	36x5	36x8D	4250
Old Hickory.....	Kentucky Wagon Mfg. Co., Third & K Sts., Louisville, Ky.								
	Model W.....	1	4-3½x5	Continental.....	22.5	135	36x6P	36x6P	.....
							36x3½	36x4	.....
Old Reliable.....	Old Reliable Motor Truck Corp., 3921 S. Michigan Ave., Chicago, Ill.								
	Model A.....	1½	4-4 x5	Wisconsin.....	25.6	150	34x4	36x6	2350
						170			
	Model B.....	2½	4-4½x6	Wisconsin.....	28.9	160	34x4	36x8	.....
	Model C.....	3½	4-4½x6	Wisconsin.....	28.9	168	36x5	36x10	.....
	Model D.....	5	4-4½x6	Wisconsin.....	36.1	180	36x6	40x12	.....
	Model K.....	7	4-5 x8½	Waukesha.....	40.0	126	36x6	40x7D	.....
	Model L.....	7	4-5 x8½	Waukesha.....	40.0	136	36x6	40x7D	
	Model.....								
	Model T.....	1	4-3½x5½	Own.....	21.7	128	35x5P	35x5P	1250

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders and Stroke of Engine	Make of Engine	N. A. C. C. H. P.	Wheels	Size of Tires		Price
							Front	Rear	
Onida.....	Onida Motor Truck Co., Broadway, 12th & 15th Sts., Green Bay, Wis.								
	Model A 9.....	1½	4-3½x5½	Own.....	22.5	135	36x3½	36x5	.....
	Model B 9.....	1½	4-4x5½	Own.....	25.0	144	36x5½	36x6	.....
	Model C 9.....	2½	4-4x5½	Own.....	25.0	160	36x4	36x7	.....
	Model D 9.....	3½	4-4½x5½	Own.....	32.4	170	36x5	36x10	.....
	Model E 9.....	5	4-4½x5½	Own.....	32.4	180	36x6	40x12	.....
Oshkosh.....	Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.								
	Model A.....	2	4-3½x5	Herschell-Spill.....	19.6	130	36x6P	36x6P	\$3750
	Model AA.....	2	4-3½x5	Herschell-Spill.....	19.6	165	36x6P	36x6P	3850
	Model B.....	2	4-4x5½	Hercules.....	25.6	146	38x7P	38x7P	4150
	Model BB.....	2	4-4x5½	Hercules.....	25.6	165	38x7P	38x7P	4300
Packard.....	Packard Motor Car Co., E. Grand Blvd. & Belt Line, Detroit, Mich.								
	Model EC.....		4-4½x5½	Own.....	28.1	144	36x3½	36x6	\$700
	Model ED.....		4-4½x5½	Own.....	32.4	156	36x5	36x6D	4450
	Model EF.....		4-5 x5½	Own.....	40.0	166	36x6	40x8D	5550
	Model EX.....		4-4½x5½	Own.....	28.1	144	36x6P	38x7P	4200
Paige.....	Paige-Detroit Motor Car Co., Fort & Mo- Kintstry Sts., Detroit, Mich.								
	Model 53-19.....	1½	4-4x5½	Hinkley.....	25.6	140	34x3½	34x5	2880
	Model 54-20.....	2	4-4½x5½	Hinkley.....	28.0	150	34x4	34x8	3400
	Model 51-18.....	3½	4-4½x5½	Hinkley.....	32.4	160	36x5	36x6D	4285
Parker.....	Parker Motor Truck Co., 608 Linus St., Milwaukee, Wis.								
	Model F-20.....	2	4-4x6	Wisconsin.....	25.6	150	34x4	36x7	.....
	Model G 1.....	2½	4-4½x6	Wisconsin.....	28.9	150	34x4	36x8	.....
	Model J-20.....	3½	4-4½x6	Wisconsin.....	32.4	160	36x5	40x10	.....
	Model M-20.....	5	4-4½x6	Wisconsin.....	36.1	160	36x6	40x12	.....
Patriot.....	Patriot Motors Co., Lincoln, Neb.....								
	Model Revere.....	¾	4-3½x5	Continental.....	22.5	128	35x5P	35x6P	.....
	Model Lincoln.....	1½	4-4 x5½	Hinkley.....	25.6	140	34x3½	36x3½	.....
	Model Washington.....	2½	4-4½x5½	Hinkley.....	32.4	156	36x7	36x7	.....
Piedmont.....	Piedmont Motor Car Co., Lynchburg, Va.								
	Model.....	1½	4-3½x5	Lycoming.....	19.6	Opt.	32x34P	32x34P	895
	Model 4-35.....	1½	4-3½x5	Lycoming.....	19.6	Opt.	34x4P	34x4	1200
Pierce-Arrow.....	Pierce-Arrow Motor Car Co., 1695 Elm- wood Ave., Buffalo, N. Y.								
	Model.....	2	4-4 x5½	Own.....	25.6	150	36x4	36x4	\$750
	Model.....	3½	4-4½x6½	Own.....	32.4	162	36x5	36x6D	950
	Model.....	5	4-4½x6½	Own.....	32.4	168	36x6	40x6D	5700
Power.....	Power Truck & Tractor Co., Goodfellow Ave. & Wabash R. R., St. Louis, Mo.								
	Model F.....	2	4-4x5½	Hinkley.....	25.6	132	36x6P	36x7	3400
	Model C.....	3½	4-4½x5½	Hinkley.....	32.4	142	36x5	40x10	4500
Rainier.....	Rainier Motor Corp., Bay Side Ave. & L. I. R. R., Flushing, N. Y.								
	Model R-21.....	¾	4-3½x5	Continental.....	19.6	125	35x5	35x6P	2150
	Model R-19.....	1	4-3½x5	Continental.....	19.6	133	34x3½	34x4	2350
	Model R-16.....	1½	4-3½x5	Continental.....	23.5	147	34x3½	34x5	2600
	Model R-18.....	2	4-4½x5	Continental.....	27.2	153	34x4	34x6	2650
	Model R-20.....	2½	4-4½x5½	Continental.....	27.2	165	34x4	34x7	2800
	Model R-15.....	3½	4-4½x5½	Continental.....	32.4	170	36x5	36x6D	4500
	Model R-17.....	5	4-4½x6	Continental.....	36.1	185	40x6D	40x8D	5250
Ranger.....	Ralston Iron Works.—See Hewitt-Ludlow. Southern Motor Mfg. Ass'n., Beatty Bldg., Houston, Texas Model TK.....								
	Model.....	2	4-3½x5	Wisconsin.....	22.5	136	34x3½	34x5	.....
Reliance.....	Reliance Motor Truck Co., Eighth St. & Pierce Ave., Appleton, Wis.								
	Model A-10.....	1½	4-4 x5½	Buda.....	25.6	150	36x3½	36x5	2400
	Model 10B.....	1½	4-4 x5½	Buda.....	25.6	150	36x6	38x7	2725
	Model B-20.....	2½	4-4½x5½	Buda.....	28.9	166	36x4	36x6D	3100
	Model 20C.....	2½	4-4½x5½	Buda.....	28.9	156	36x6	42x9	2575
Ree.....	Ree Motor Car Co., Lansing, Mich. lba.								
	Model (Speed Wagon).....	1500	4-4½x4½	Own.....	27.2	128	34x4½P	34x4½P	1385

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Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders Bore and Stroke of Engine	Make of Engine	N. A. C. C. H. P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Republic.....	Republic Motor Truck Co., 933 Michigan Ave., Alma, Mich.								
	Model 10E.....	1	4-3½x5	Continental.....	32.5	124	35x5P	35x5P	\$1995
	Model 11X.....	1½	4-3½x5	Continental.....	22.5	144	34x3½	34x5	2295
	Model 19.....	2½	4-4½x5½	Continental.....	27.2	144	36x4	36x7	2795
						168			
	Model 19W.....	2½	4-4 x5½	Waukesha.....	25.5	154	36x4	36x7	2795
	Model 20.....	3½	4-4½x5½	Continental.....	32.4	168	36x5	36x10	3845
Riker.....	Locomobile Co., 1 S. Main St., Bridgeport, Conn.								
	Model B.....	3	4-4½x6	Own.....	28.9	150			4600
						170	36x5	36x5 D	4600
						190			4700
						150			4700
	Model BB.....	4	4-4½x6	Own.....	28.9	170	36x5	36x5 D	4750
						190			4800
Rock Falls.....	Rock Falls Mfg. Co., Sterling, Ill.								
	Model 11..... lbs.	2500	6-3½x5	Continental.....	33.5	150	35x5	35x5D	.....
Rowe.....	Rowe Motor Mfg. Co., Lancaster, Pa.								
	Model H. S. W.....	¾	4-3½x5	Wisconsin.....	22.5	122	34x5P	34x5P	2400
	Model CW.....	1½	4-3½x5	Wisconsin.....	22.5	133	36x6P	36x6P	3000
	Model CDW.....	2	4-4 x5	Wisconsin.....	25.5	140	34x4	36x3 D	3300
	Model HW.....	4	4-4½x6	Wisconsin.....	28.9	158	38x5	38x6D	4500
	Model FW.....	5	4-4½x6	Wisconsin.....	32.4	170	36x6	40x6D	5500
	Model GPW.....	3	4-3½x5	Herschell-Spill.....	33.8	170	38x7P	42x9P	5250
	Model GSW.....	3	4-4 x6	Wisconsin.....	25.5	168	34x5	36x5 D	4150
Samson.....	Samson Tractor Co., Industrial Ave., Janesville, Wis.								
	Model 15.....	¾	4-3½x4	Chevrolet.....	21.7	118	32x4	32x4	995
	Model 25.....	1½	4-3½x5½	Chevrolet.....	21.7	118	35x5	35x5	1395
Sandow.....	Sandow Motor Truck Co., 3333 W. Grand Ave., Chicago, Ill.								
	Model C.....	1	4-3½x5	Continental.....	19.6	120	34x3½	34x5	2290
	Model CG.....	1½	4-3½x5	Continental.....	23.5	135	34x4	34x6	2590
	Model I.....	2	4-3½x5	Continental.....	22.5	150	36x4	36x6	2890
	Model J.....	2½	4-4½x5½	Continental.....	27.2	165	36x4	36x7	3275
	Model LM.....	3½	4-4½x5½	Continental.....	32.4	175	36x5	36x5D	4295
	Model L.....	5	4-4½x5½	Continental.....	32.4	175	36x6	40x6D	4775
Sanford.....	Sanford Motor Truck Co., Syracuse, N. Y.								
	Model W25.....	2½	4-4½x5½	Continental.....	27.2	174	36x4	36x4	3350
	Model W35.....	3½	4-4½x5½	Continental.....	32.4	174	36x5	38x5D	4200
	Model W25.....	5	4-4½x5½	Continental.....	32.4	174	36x5	40x6D	5100
Schacht.....	Schacht Motor Truck Co., G. A., Eighth & Evans Sts., Cincinnati, Ohio.								
	Model.....	2	4-4½x5½	Buda.....	28.9	156	36x4	36x7	3550
	Model.....	2½	4-4½x5½	Buda.....	28.9	156	36x4	36x4D	3850
						156			
	Model.....	3½	4-4½x6	Buda.....	28.9	168	36x5	36x5D	4350
						180			
	Model.....	5	4-4½x6	Buda.....	32.4	180	36x5	40x6D	5350
						180			
Schwartz.....	Schwartz Motor Truck Corp., Reading, Pa.								
	Model A.....	1½	4-3½x5	Lycoming.....	19.6	130	34x4½	34x4½	1685
	Model BW.....	1½	4-3½x5½	Buda.....	22.5	140	34x3½	34x6	2600
	Model CW.....	2½	4-4½x5½	Buda.....	28.9	150	36x4	36x8	3200
	Model DW.....	5	4-4½x6	Buda.....	32.4	170	36x6	40x12	4900
Selden.....	Selden Truck Corp., Rochester, N. Y.								
	Model 1½A.....	1½	4-3½x5	Continental.....	22.5	137½	34x3½	34x5	2360
	Model 2½A.....	2½	4-4½x5½	Continental.....	27.2	145	36x4	36x7	3425
	Model 3½A.....	3½	4-4½x5½	Continental.....	32.4	162	36x5	36x10	4175
	Model 5A.....	5	4-4½x6	Continental.....	36.1	164	36x6	40x12	5600
Seneca.....	Seneca Motor Car Co., Dept. 124, Fosterin Ohio.								
	Model M.....	½	4-3½x4½	LeRoi.....	15.6	108	30x3½P	30x3½P	1020
Service.....	Service Motor Truck Co., Grand St., Wash. Ind.								
	Model 15.....	¾	4-3½x5	Mid-West.....	21.0	132	34x4½P	35x5P	1840
	Model 20.....	1	4-3½x5½	Buda.....	19.6	137	34x3½	34x5	2415
	Model 31.....	1½	4-4½x5½	Buda.....	25.5	150	36x3½	36x6	2995
	Model 36.....	1½	4-4½x5½	Buda.....	28.9	150	35x5P	38x7P	3415
	Model 51.....	2½	4-4½x5½	Buda.....	28.9	160	36x4	36x7	3475
	Model 61.....	3½	4-4½x5½	Buda.....	32.4	171	36x5	36x5D	4485
	Model 76.....	3½	4-4½x5½	Buda.....	28.9	171	36x5	36x5D	4285
	Model 71.....	3½	4-4½x5½	Buda.....	28.9	171	36x5	40x6D	5275
	Model 101.....	5	4-4½x6	Buda.....	32.4	171½	36x6		

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Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C., H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
	Southern Motor Mfg., Ass'n. See Ranger.								
Southern.....	Southern Truck & Car Corp., Greensboro, N. C.								
	Model 10.....	1	4-3 $\frac{1}{2}$ x5	Buda.....	22.5	130	35x5	35x5	\$2099
	Model 15.....	1 $\frac{1}{2}$	4-3 $\frac{3}{4}$ x5	Continental.....	22.5	143	34x3 $\frac{1}{2}$	34x5	2590
	Model 20.....	2	4-4 $\frac{1}{4}$ x4 $\frac{1}{2}$	Buda.....	28.9	150	36x4	36x7	2990
	Model 16.....	1 $\frac{3}{4}$	4-4 $\frac{1}{4}$ x5 $\frac{1}{2}$	Buda.....	28.9	150	34x4	34x6	2790
Standard.....	Standard Motor Truck Co., 1111 Bellevue Ave., Detroit, Mich.								
	Model 1K.....	1 $\frac{1}{2}$	4-3 $\frac{1}{2}$ x5	Continental.....	22.5	134	34x3 $\frac{1}{2}$	34x5	.....
	Model 70.....	2 $\frac{1}{2}$	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	Continental.....	27.2	140	36x4	36x7	.....
	Model 66.....	3 $\frac{1}{2}$	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	Continental.....	32.4	160	36x5	36x10	.....
	Model 5K.....	5-6	4-4 $\frac{1}{2}$ x6	Continental.....	36.1	164	36x6	40x12	.....
	Star Carriage Co.—See Northwestern.								
Sterling.....	Sterling Motor Truck Co., 46th Ave. & Rogers St. (W. Alle), Milwaukee, Wis.								
	Model.....	1 $\frac{1}{2}$	4-4x5 $\frac{1}{2}$	Own.....	25.6	142	36x3 $\frac{1}{2}$	36x5	\$200
	Model.....	2	4-4x5 $\frac{1}{2}$	Own.....	25.6	142	36x4	36x6	3500
	Model.....	2 $\frac{1}{2}$	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	Own.....	30.6	156	36x4	36x4D	2650
	Model.....	3 $\frac{1}{2}$	4-4 $\frac{1}{2}$ x6 $\frac{1}{2}$	Own.....	32.4	162	36x5	40x5D	4650
	Model (Worm).....	5	4-5x6 $\frac{1}{2}$	Own.....	40.0	168	36x6	40x6D	5500
	Model (Chain).....	5	4-5x6 $\frac{1}{2}$	Own.....	40.0	174	36x6	40x6D	6000
	Model (Chain).....	7 $\frac{1}{2}$	4-5x6 $\frac{1}{2}$	Own.....	40.0	174	36x6	40x7D	6500
Stewart..... See page 49	Stewart Motor Corp., Buffalo, N. Y.								
	Model 11.....	$\frac{3}{4}$	4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	LeRei.....	15.6	110	32x4P	32x4P	1350
	Model 15.....	1	4-3 $\frac{3}{4}$ x5 $\frac{1}{2}$	Buda.....	21.0	130	35x5	35x5	1875
	Model 7.....	2	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	Continental.....	27.2	156	34x4	34x7	2500
	Model 7x.....	2 $\frac{1}{2}$	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	Buda.....	28.9	156	34x4	34x7	2550
	Model 9.....	1 $\frac{1}{2}$	4-3 $\frac{3}{4}$ x5	Continental.....	22.5	140	34x3 $\frac{1}{2}$	34x5	2200
	Model 10.....	3 $\frac{1}{2}$	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	Continental.....	32.4	165	36x5	36x5D	3850
	Model 10x.....	3 $\frac{1}{2}$	4-4 $\frac{1}{2}$ x6	Buda.....	32.4	165	36x5	36x5D	3850
Stoughton.....	Stoughton Wagon Co., Stoughton, Wis.								
	Model A.....	1	4-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	Waukesha.....	22.5	130	35x5P	35x5P	1995
	Model B.....	1 $\frac{1}{2}$	4-3 $\frac{3}{4}$ x5 $\frac{1}{2}$	Waukesha.....	22.5	140 $\frac{1}{2}$	36x3 $\frac{1}{2}$	36x5	2350
	Model D.....	2	4-4 x5 $\frac{1}{2}$	Hercules.....	25.6	140 $\frac{1}{2}$	36x4	36x7	2800
	Model F.....	3	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	Hercules.....	28.9	156	36x5	36x5D	3600
	Model C. (Speed).....	.....	.....	.....	.....	.....	.....	.....	.....
Sullivan..... See page 17	Sullivan Motor Truck Corp., Rochester, N. Y.								
	Model E.....	2	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	Buda.....	28.9	150	36x4	36x6	3350
	Model H.....	3 $\frac{1}{2}$	4-4 $\frac{1}{2}$ x6	Buda.....	32.4	170	36x5	36x5D	4650
Super.....	O'Connell Motor Truck Co., Waukegan, Ill.								
	Model 50.....	2 $\frac{1}{2}$	4-4 x6	Wisconsin.....	25.6	156	36x4	36x8	3300
	Model 70.....	3 $\frac{1}{2}$	4-4 $\frac{1}{2}$ x6	Wisconsin.....	28.9	164	36x5	40x5	4300
	Model 100.....	5	4-4 $\frac{1}{2}$ x6	Wisconsin.....	36.1	164	36x5	40x6D	5300
Superior.....	Superior Motor Truck Co., 101 Wells St., Atlanta, Ga.								
	Model D.....	1	4-3 $\frac{3}{4}$ x5	Continental.....	22.5	124	34x4 $\frac{1}{2}$ P	34x4	1650
	Model E.....	2	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	Continental.....	27.2	144	36x4	36x6	2600
	Tegetmeier & Riepe Co.—See New York.								
T.C.A.W.D.....	Twin City Four Wheel Drive Co., 2490 University Ave., St. Paul, Minn.								
	Model B.....	3 $\frac{1}{2}$	4-5 $\frac{1}{2}$ x6	Wisconsin.....	42.0	140	36x6	36x6	4750
	Model A.....	5	4-5 $\frac{1}{2}$ x6 $\frac{1}{2}$	Wisconsin.....	42.0	140	36x7	36x7	5250
	Model W.....	3 $\frac{1}{2}$	4-5 $\frac{1}{2}$ x6	Wisconsin.....	42.0	140	36x6	36x6	
	Thomart Motor Co.—See Akron-Multi.								

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Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Tiffin.....	Tiffin Wagon Co., Harrison St., Tiffin, Ohio.								
	Model G. W.....	1½	4-4½x5½	Continental.....	27.2	135	36x3½	36x5	\$2400
	Model M. W.....	2½	4-4½x5½	Continental.....	27.2	148	36x4	36x3½D	3100
	Model P. W.....	3½	4-4½x5½	Continental.....	32.4	160	36x5	40x5D	4100
	Model T. W.....	5	4-4½x6	Continental.....	36.1	168	36x6	40x6D	4800
	Model V. W.....	6	4-4½x6	Continental.....	36.1	168	36x6	40x12	5000
Titan..... See page 45	Titan Truck Co., Milwaukee, Wis.								
	Model.....	2½	4-4½x5½	Buda.....	28.9	158	34x4	36x4D	.....
	Model.....	3½	4-4½x6	Buda.....	32.4	156	36x5	40x5D	.....
	Model.....	5-6	4-4½x6	Buda.....	32.4	156	36x5	40x6D	.....
Tower.....	Tower Motor Truck Co., W. Grove St., Greenville, Mich.								
	Model J.....	1½	4-4½x5½	Continental.....	27.2	142	36x5P	38x7	2900
	Model H.....	2½	4-4½x5½	Continental.....	27.2	148	36x4	36x7	3200
	Model G.....	3½	4-4½x5½	Continental.....	32.4	165	36x5	38x10	4100
Traffic..... See page 38	Traffic Motor Truck Corp., St. Louis, Mo.								
	Model C.....	4000	4-3½x5	Continental.....	22.5	132	34x3½	34x5	.....
	Model.....	6000	4-3½x5	Continental.....	22.5	135	36x4	36x7	.....
Transport..... See page 39	Transport Truck Co., Mt. Pleasant, Mich.								
	Model 29.....	1	4-3½x5½	Buda.....	22.5	130	34x3½	34x4	1395
	Model 30.....	1½	4-3½x5	Continental.....	22.5	140	36x3½	36x5	1995
	Model 50.....	2½	4-4½x5½	Continental.....	28.9	150	36x4	36x7	2785
	Model 70.....	3½	4-4½x6	Buda.....	32.4	170	36x5	36x10	3685
Traylor.....	Traylor Engineering & Mfg. Co., (Truck & Traction Div.), Corwells, Pa.								
	Model B.....	1½	4-3½x5½	Buda.....	22.5	140	34x3½	34x6	2390
	Model C.....	2	4-4 x5½	Buda.....	26.6	146	36x4	36x7	2850
	Model D.....	3	4-4½x5½	Buda.....	28.9	150	36x4	36x8	3300
	Model E.....	4	4-4½x6	Buda.....	32.4	170	36x5	40x5D	4450
	Model F.....	5	4-4½x6	Buda.....	32.4	170	36x5	40x6D	4700
Triangle..... See page 41	Triangle Motor Truck Co., St. Johns, Mich.								
	Model AA.....	¾	4-3½x5	Hersehell-Spill	16.9	115	34x4½P	34x4½P	1385
	Model A.....	1½	4-3½x5½	Waukesha.....	22.5	144	34x3½	34x6	2350
	Model B.....	2½	4-4x5½	Waukesha.....	25.6	150	36x4	36x7	2950
	Model C.....	2	4-3½x5½	Waukesha.....	22.5	147	36x4	36x7	2700
Triumph.....	Triumph Truck & Tractor Co., 110-16 Southwest Blvd., Kansas City, Mo.								
	Model H B.....	2	4-3½x5½	Buda.....	22.5	144	36x3½	36x5	.....
	Model H.....	1½	4-3½x5½	Buda.....	22.5	144	36x4	36x7	.....
	Model HC.....	1½	4-3½x5½	Buda.....	22.5	144	36x3½	36x5	.....
	United Four Wheel Drive Truck Corp.— See Allfour.								
U.S.....	United States Motor Truck Co., 17th St. & Madison Ave., Covington, Ky.								
	Model N.....	1½	4-3½x5	Continental.....	22.5	144	36x3½	36x5	.....
	Model R.....	2½	4-4x5½	Hinkley.....	25.6	156	36x4	36x8	.....
	Model S.....	3½	4-4½x5½	Hinkley.....	32.4	168	36x5	36x10	.....
	Model T.....	5	4-4½x6½	Hinkley.....	36.1	172	36x6	40x12	.....
Ultimate.....	Ultimate Motor Co., 407-09 Elizabeth Ave., Newark, N. J.								
	Model A.....	2	4-4 x5½	Buda.....	25.6	140	36x3½	36x6	3200
	Model AJ.....	2	4-4½x5½	Buda.....	28.9	156	36x5P	36x7P	3300
	Model B.....	3	4-4½x5½	Buda.....	28.9	154	36x4	36x8	3750
	Model BL.....	3	4-4½x5½	Buda.....	28.9	178	36x4	36x8	3850
Union..... See page 47	Union Motor Truck Co., Bay City, Mich.								
	Model F.....	2½	4-4 x6	Wisconsin.....	25.6	152	36x5	36x8	3150
	Model F. W.....	2½	4-4 x6	Wisconsin.....	25.6	152	36x5	36x8	3490
	Model H. W.....	4	4-4½x6	Wisconsin.....	32.4	171	36x6	36x10	3975
	Model J. W.....	4	4-4½x6	Wisconsin.....	32.4	171	36x6	36x10	4650
	Model.....	6	4-5 x6	Wisconsin.....	40.0	193	36x6	40x14	5890
United.....	United Motors Co., 678 North St., N. Grand Rapids, Mich.								
	Model A.....	1½	4-3½x5½	Buda.....	22.5	145	34x3½	34x5	2445
	Model B.....	2½	4-4½x5½	Buda.....	28.9	151	36x4	36x7	3150
	Model C.....	3½	4-4½x5½	Buda.....	28.9	171	36x5	36x8D	3975
	Model V.....	5	4-4½x6	Buda.....	32.4	177	36x5	40x6D	5000

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							Front	Rear	
Ursus.....	Ursus Motor Co., 6601 W. Grand Ave., Chicago, Ill.								
	Model T30.....	1	4-3½x5½	Buda.....	21.0	132	34x5P	34x5P	\$2050
	Model U40.....	1½	4-3½x5½	Buda.....	22.5	Opt.	36x3½	36x5	2050
	Model V50.....	2½	4-4½x5½	Buda.....	28.9	150	38x4	36x7	3250
	Model W60.....	3½	4-4½x6	Buda.....	32.4	186	36x5	36x5D	3950
Vellie.....	Vellie Motors Corp., 109 Vellie Place, Moline, Ill.								
	Model 46.....	1½	4-3½x5	Continental....	22.5	133	36x3½	36x5	2200
Vim.....	Vim Motor Truck Co., Roberts Ave & P R R., Philadelphia, Pa.								
	Model 29.....	½	4-3½x4½	Own.....	15.6	108	31x4P	31x4P	1050
	Model 30.....	½	4-3½x4½	Own.....	15.6	127	32x4½P	32x4½P	1175
	Model 31.....	1	4-3½x5½	Hercules.....	22.5	125	35x5P	35x5P	1975
	Vreeland Motor Co.—See Ultimate.								
Walter.....	Walter Motor Truck Co., 227-43 W. 61st St., New York, N. Y.								
	Model M.....	2½	4-4½x5½	Waukesha.....	30.6	168	36x4	36x8	3850
	Model S.....	5	4-4½x6½	Waukesha.....	32.4	168	36x6	40x6D	5600
Ward La France.....	La France Truck Corp. Ward., Elmira, N.Y.								
See page 45	Model 2B.....	2½	4-4½x5½		30.6	158	36x4	36x4	3590
	Model 4A.....	3½	4-4½x6½		32.4	162	36x5	36x5D	4690
	Model 5A.....	5	4-5 x6½			188			
					40.0	164	36x6	40x6D	5590
Watson.....	Watson Products Corp., Canastota, N.Y.								
	Model B.....	1	4-3½x5½	Waukesha.....	22.5	128	35x5	35x5	186½
	Model N.....	3½	4-4½x5½	Continental....	32.4	168	36x5	36x10	4250
Western.....	Western Truck Mfg. Co., 122 N. Curtis St., Chicago, Ill.								
	Model C.....	2	4-4½x5½	Continental....	27.2	146	36x4	36x6	2400
	Model F.....	3	4-4½x5½	Continental....	27.2	158	36x4	36x7	2800
	Model T.....	7	4-4½x5½	Wisconsin.....	36.1	146	36x4	40x7D	5000
White.....	White Co., 6611 Euclid Ave., Cleveland, Ohio.								
	Model 15.....	¾	4-3½x5½	Own.....	22.5	133½	34x5P	34x5P	2400
	Model 20.....	2	4-3½x5½	Own.....	22.5	157½	36x4	36x7	3250
	Model 40.....	3½	4-3½x5½	Own.....	22.5	174	36x5	40x5D	4200
	Model 45.....	5	4-4½x5½	Own.....	28.9	174	36x6	40x6D	4500
White Hickory.....	White Hickory Motor Corp., East Point, Ga.								
	Model E.....	1	4-3½x5	Continental....	22.5	124	34x5	34x5	2450
	Model H.....	1½	4-3½x5½	Continental....	22.5	144	36x3½	36x5	2750
	Model K.....	2½	4-4½x5½	Continental....	27.2	150	36x4	36x7	3350
Wichita.....	Wichita Motors Co., Wichita Falls, Texas.								
	Model L.....	1½	4-3½x5½	Waukesha.....	22.5	144	36x3½	36x5	2600
	Model RX.....	2½	4-3½x5½	Waukesha.....	30.6	160	36x4	36x8	3600
	Model O.....	3½	4-4½x6½	Waukesha.....	32.4	165	36x5	36x6D	4000
	Model S.....	5	4-4½x6½	Waukesha.....	32.4	165	36x6	40x6D	5000
Wilson.....	Wilson Co., J. C., 15th & Warren Aves., Detroit, Mich.								
	Model F.....	1½	4-3½x5	Own.....	22.5	140	36x3½	36x5	2270
	Model EA.....	2½	4-4½x5½	Own.....	27.2	152	36x4	36x7	2825
	Model G.....	3½	4-4½x5½	Own.....	32.4	160	36x5	36x5D	3685
	Model H.....	5	4-4½x6	Own.....	36.1	160	36x6	40x6D	4520
Winther.....	Winther Motors Inc. Kenosha Wis.								
See page 37	Model 751.....	1	4-3½x5	Herschell-Spill.	19.6	135	34x4½	35x5	1795
	Model 39.....	1½	4-3½x5	Wisconsin.....	22.5	140	34x3½	34x5	2450
	Model 430.....	1½	4-3½x5	Wisconsin.....	22.5	132	32x4	32x4	2850
	Model 49.....	2	4-4 x5	Wisconsin.....	25.6	147	34x4	34x4D	3250
	Model 450.....	2½	4-4 x5	Wisconsin.....	25.6	150	34x4	34x6	3690
	Model 70.....	3½	4-4 x6	Wisconsin.....	25.6	150	36x5	36x5D	4200
	Model 109.....	5	4-4½x6	Wisconsin.....	32.4	162	36x6	40x6D	5250
	Model 140.....	7	4-5 x6	Wisconsin.....	40.0	162	36x6	40x7D	5900
Wisconsin.....	Wisconsin Farm Tractor Co., Water St., Sauk City, Wis.								
	Model B.....	1	4-4 x5½	Waukesha.....	25.6	136	34x5	34x5	1950
	Model C.....	1½	4-4½x5½	Waukesha.....	30.6	136	36x6	38x7	2500
	Model D.....	2½	4-4½x6½	Waukesha.....	32.4	156	36x5	38x10	3600
	Model E.....	3½	4-5 x6½	Waukesha.....	40.0	156	36x6	38x12	4000
Witt-Will.....	Witt-Will Co., 52 N. St., N. E., Washing- ton, D. C.								
	Model N.....	1½	4-3½x5½	Continental....	22.5	120	36x3½	36x4	2450
	Model P.....	2	4-4½x5½	Continental....	27.2	144	36x3½	36x7	3000

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Gasoline Commercial Vehicles—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity, Tons	No. of Cylinders, Bore and Stroke of Engine	Make of Engine	N.A.C.C. H.P.	Wheelbase	Size of Tires		Price
							Front	Rear	
Wolverine..... See page 39	American Commercial Car Co., Detroit Mich. Model C..... Model D..... Model L..... Model K.....	1½ 2 2½ 2½	4-3½x5 4-3½x5 4-4½x5½ 4-4½x5½	Continental..... Continental..... Continental..... Continental.....	22.5 22.5 32.4 27.2	140 148 166 168	34x3½ 34x4 36x5 36x4	34x5 34x3½ 36x10 36x8	\$2380 2650 4150 3475
Yellow Cab..... See page 19	Yellow Cab Mfg. Co., Chicago, Ill. Model M-21..... Model M-41.....	¾ 1½	4-3½x4½ 4-3½x5	Continental..... Continental.....	22.5 22.5	100 100	33x4½ 35x5	33x4½ 35x5	2050 2350

Electric Commercial Vehicles

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Load Capacity Tons	Make of Battery	Wheel Base	Size of Tires		Price
					Front	Rear	
G. T.....	Commercial Truck Co., Hunting Park & Rising Sun Ave., Philadelphia, Pa. Model BR1..... Model BR2a..... Model BR2..... Model BR4..... Model AK7..... Model AK7..... Model AK10.....	¾ ¾ 1 1 2 2½ 2½ 5	Opt..... Opt..... Opt..... Opt..... Opt..... Opt..... Opt.....	80½ 91½ 101 116 122 126 132	36x3 36x3 36x3½ 36x4 36x8 36x5 36x7	36x3 36x3½ 36x4 36x4D 36x4D 36x5D 36x5D	..... ..... ..... ..... ..... ..... .....
Harlick.....	Harlick Electric Construction Co., 1807 Walnut St., Chicago, Ill. Model 1002A..... Model 1002D..... Model 1002Q..... Model 1002F.....	1 1½ 2 3	Edison..... Edison..... Edison..... Edison.....	94 108 120 120	36x3 36x4 36x5 36x6	36x3½ 36x4 36x5 36x7	..... ..... ..... .....
Landen.....	Landen Co., Power St., Danbury, Conn. Model BG..... Model M..... Model M..... Model M..... Model M.....	¾ 1 1 2 5	Opt..... Opt..... Opt..... Opt..... Opt.....	90 96 108 121 133 133 146 156	32x4½P 36x3 36x4 36x4 36x5 36x5D 36x5D	32x4½P 36x3½ 36x3½ 36x4D 36x5D 36x5D 36x5D	..... ..... ..... ..... ..... ..... .....
Onoda.....	Onoda Motor Truck Co., Broadway, 12th & 15th Sts., Green Bay, Wis. Model 2E..... Model 5-E..... Model (Special).....	2 5 ¾	Opt..... Opt..... Opt.....	111 141 96	36x4 36x5 36x3	36x7 40x13 36x3½	..... ..... .....
Walker.....	Walker Vehicle Co., State and 57th Sts., Chi- cago, Ill. Model M..... Model K..... Model L..... Model P..... Model N.....	¾ 1 1 2 2½ 5	Opt..... Opt..... Opt..... Opt..... Opt.....	94 96 112 131 141	34x3 34x3½ 38x4 36x5 38x5	36x3½ 36x4 38x5 38x4D 38x5D	..... ..... ..... ..... .....
Walter.....	Walter Motor Truck Co., 227 W. 61st St., New York, N. Y. Model ES..... Model EN.....	5 2	Exide..... Exide.....	140 114	36x5D 36x4	40x6D 36x7	..... .....
Ward.....	Ward Motor Vehicle Co., S. Fulton Ave., Mt. Vernon, N. Y. Model W-S. 2..... Model W-A..... Model W-B..... Model W-D..... Model W-F..... Model W-H..... Model W-M.....	750 1250 1 2 3½ 5 5	Opt..... Opt..... Opt..... Opt..... Opt..... Opt..... Opt.....	88 90 102 114 132 144 88	32x3 32x3½ 34x4 36x5 36x5 36x7 32x4	32x3½ 34x4 36x5 36x10 40x12 32x4	..... ..... ..... ..... ..... ..... .....

Electric Industrial Trucks & Tractors

Automatic Transportation Co., 2933 Main St., Buffalo, N. Y.	Karry-Lode Industrial Truck Co., 98-100 Mott Ave., Long Island City, N. Y.
Baker H. & L. Co., Cleveland, Ohio	Koppel Industrial Car & Equipment Co., Koppel, Pa.
Industrial Truck Co. (Div. Cowan Truck Co.), Holyoke, Mass.	Lakewood Engineering Co., Beres Rd. Cleveland, Ohio
Crescent Truck Co., 347-49 First Ave., Elizabeth, N. J.	Lansing Co., Lansing, Mich.
Elwell-Parker Co., 4223 St. Clair Ave., Cleveland, Ohio	Mercury Mfg. Co., 4118 S. Halsted St., Chicago, Ill.
Hunt Co., C.W., 5080 Richmond Ter. W. New Brighton, N. Y.	Ross Carrier Co., Second & Miller Sts., Benton Harbor, Mich.

Please mention The Automobile Trade Directory

Tractors

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Adams	Adams Co., Marysville, Ohio.....	Wheel	.....	1-9-18	....	Gasoline	\$ 700
Advance-Rumely Oil Pull 12-30	Advance-Rumely Thresher Co., LaPorte, Ind.....	Wheel	Own	2-6x8	31.2	Kerosene	....
Advance-Rumely Oil Pull 16-30	Advance-Rumely Thresher Co., LaPorte, Ind.....	Wheel	Own	2-7x8½	39.2	Kerosene	....
Advance-Rumely Oil Pull 20-40	Advance-Rumely Thresher Co., LaPorte, Ind.....	Wheel	Own	2-8x10	51.2	Kerosene	....
Advance-Rumely Oil Pull 30-60	Advance-Rumely Thresher Co., LaPorte, Ind.....	Wheel	Own	2-10x12	16.1	Kerosene	....
	Agrimotor Mfg. Co.—See Mid-West.						
Allis-Chalmers, 12-30	Allis-Chalmers Mfg. Co., Milwaukee, Wis.....	Wheel	Midwest	4-4½x5½	27.2	Gasoline	....
Allis-Chalmers, 18-30	Allis-Chalmers Mfg. Co., Milwaukee, Wis.....	Wheel	Own	4-4½x6½	36.1	Gasoline	....
						Kerosene	....
Allwork I	Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill..	Wheel	Own	4-5 x6	40.0	Kerosene	....
Allwork II	Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill..	Wheel	Own	4-4½x6	36.1	Kerosene	....
American 20	American Tractor Foundry & Mfg. Co., 315 W. Waterman St., Wichita, Kansas.....	Wheel	Stearns	4-4x6	35.6	Gasoline	....
						Kerosene	....
Aultman-Taylor 30-60	Aultman & Taylor Machinery Co., Mansfield, Ohio.	Wheel	Own	4-7x9	78.4	Gasoline	....
						Kerosene	....
Aultman-Taylor 22-45	Aultman & Taylor Machinery Co., Mansfield, Ohio.	Wheel	Own	4-5½x8	48.4	Gasoline	....
						Kerosene	....
Aultman-Taylor 15-30	Aultman & Taylor Machinery Co., Mansfield, Ohio	Wheel	Climax	4-8x6½	40.0	Gasoline	....
						Kerosene	....
Automotive B-3	Automotive Corporation, Oakdale and Tracy Sts., Toledo, Ohio	Wheel	Hercules	4-4 x5½	25.6	Gasoline	1785
Avery 8-16	Avery Co., Peoria, Ill.....	Wheel	Own	2-5½x6	24.2	Gasoline	....
						Kerosene	....
Avery 12-20	Avery Co., Peoria, Ill.....	Wheel	Own	4-4½x8	30.6	Gasoline	....
						Kerosene	....
Avery 12-25	Avery Co., Peoria, Ill.....	Wheel	Own	2-6½x7	33.8	Gasoline	....
						Kerosene	....
Avery 14-28	Avery Co., Peoria, Ill.....	Wheel	Own	4-4½x7	34.2	Gasoline	....
						Kerosene	....
Avery 18-36	Avery Co., Peoria, Ill.....	Wheel	Own	4-5½x6	48.4	Gasoline	....
						Kerosene	....
Avery 25-50	Avery Co., Peoria, Ill.....	Wheel	Own	4-6½x7	67.6	Gasoline	....
						Kerosene	....
Avery 40-80	Avery Co., Peoria, Ill.....	Wheel	Own	4-7½x8	96.8	Gasoline	....
						Kerosene	....
Avery B	Avery Co., Peoria, Ill.....	Wheel	Own	4-3 x5	14.4	Gasoline	....
						Kerosene	....
Avery C	Avery Co., Peoria, Ill.....	Wheel	Own	6-3 x4	21.6	Gasoline	....
						Kerosene	....
Bates Steel F	Backus Tractor Co.—See Baby Savidge.						
	Bates Machine & Tractor Co., Henderson & Jackson Sts., Joliet, Ill.....	Crawler	Midwest	4-4½x5½	27.2	Gasoline	....
Baby Savidge	Backus Tractor Co., 917 E. Broadway, Alton, Ill..	Wheel	Gray (Vies'y)	4-3½x5	19.6	Gasoline	1695
Beeman I	Beeman Tractor Co., 38th Ave., N. E. & Fifth St., Minneapolis, Minn.	Wheel	Own	1-3½x4½	4.9	Gasoline	240
Beeman G	Beeman Tractor Co., 38th Ave. N. E. & Fifth St., Minneapolis, Minn.	Wheel	Own	1-3½x4½	4.9	Gasoline	315
Beltrall B	Beltrall Tractor Co., 2237 Hampden Ave., St. Paul, Minn.....	Crawler	Waukesha	4-3½x5½	22.5	Gasoline	....
						Distillate	....

Please mention The Automobile Trade Directory

Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Best 60	Best Gas Traction Co., C. L. Davis St., San Leandro, Cal.	Crawler	Own	4-4½x5½	36.1	Gasoline	\$8450
Best 20	Best Gas Traction Co., C. L. Davis Street, San Leandro, Cal.	Crawler	Own	4-4½x5½	36.1	Gasoline	3100
Blumberg Steady Pull 15-24	Blumberg Motor Mfg Co., Barnett & Mesquite St., San Antonio, Texas	Wheel	Own	4-4 x5	25.6	Gasoline	....
Boring	Boring Tractor Corp., Rockford, Ill.	Wheel	Waukesha	4-4½x5½	30.6	Gasoline	....
Boss 12-34	Russell & Co., Massillon, Ohio	Wheel	Waukesha	4-4½x5½	33.4	Gasoline	....
Boss 15-30	Russell & Co., Massillon, Ohio	Wheel	Climax	4-4½x5½	33.4	Gasoline	....
Boss 20-40	Russell & Co., Massillon, Ohio	Wheel	Climax	4-5½x7	48.0	Gasoline	....
Boss-Giant 25-60	Russell & Co., Massillon, Ohio	Wheel	Own	4-6 x10	....	Gasoline	....
Burn-Off	Burn-Off Tractor Co., Warren, Ind.	Wheel	Own	2-6½x7	26.6	Kerosene	1650
C. O. D.	C. O. D. Tractor Co., Minneapolis, Minn.	Wheel	Own	2-6½x7	43.8	Kerosene	1395
	Cameron Motors Corp. See Sandusky.						
	Casa Flew Works Co., J. L.—See Wallis.						
Capital	Dinsinger & Bro. Co., C. H. A., Fourth & Cherry St., Wrightsville, Pa.	Wheel	Own	4-4x5	25.6	Gasoline	550
Capital	Dinsinger & Bro. Co., C. H. A., Fourth & Cherry St., Wrightsville, Pa.	Wheel	Own	4-5 x6	40.0	Kerosene	1000
Capital	Dinsinger & Bro. Co., C. H. A., Fourth & Cherry St., Wrightsville, Pa.	Wheel	Own	4-5½x6½	48.4	Kerosene	1250
Case 10-18	Case T. M. Co., J. I., State & Douglas St., Racine, Wis.	Wheel	Own	4-3½x5	24.0	Gasoline	800
Case 15-27	Case T. M. Co., J. I., State & Douglas St., Racine, Wis.	Wheel	Own	4-4½x6	32.4	Gasoline	1680
Case 23-40	Case T. M. Co., J. I., State & Douglas St., Racine, Wis.	Wheel	Own	4-6½x6½	48.4	Gasoline	3100
Caterpillar 75	Holt Manufacturing Co., Stockton, Cal. & Peoria, Ill.	Crawler	Own	4-7½x8	90.0	Distillate	....
Caterpillar 45	Holt Manufacturing Co., Stockton, Cal. & Peoria, Ill.	Crawler	Own	4-6 x7	57.6	Distillate	....
Caterpillar, 5 tons	Holt Manufacturing Co., Stockton, Cal. & Peoria, Ill.	Crawler	Own	4-4½x6	36.1	Gasoline	....
Caterpillar, 10 tons	Holt Manufacturing Co., Stockton, Cal. & Peoria, Ill.	Crawler	Own	4-6½x7	67.6	Gasoline	....
Chicago 60	Shaw Am'n, Baynes City, Mich.	Wheel	Own	4-4½x6	32.4	Gasoline	2500
Cletrac W	Cleveland Tractor Co., 19000 Euclid Ave., Cleveland, Ohio	Crawler	Own	4-4 x5½	25.6	Gasoline	....
Cletrac F	Cleveland Tractor Co., 19000 Euclid Ave., Cleveland, Ohio	Crawler	Own	4-3½x4½	16.9	Gasoline	....
	Cleveland Tractor Co.—See Cletrac.						
Column	Farmers Mfg. Co., Seavitt Bldg., Kansas City, Mo.	Wheel	Climax	4-5 x6½	40.0	Gasoline	1850
Comet 6	Comet Automobile Co., 825-60 Garfield Ave., Decatur, Ill.	Wheel	Erd	4-4 x6	25.6	Gasoline	1875
Common Sense	Farm Power & Sales Co., 623 Ninth St., S. E., Minneapolis, Minn.	Wheel	Erd	4-5 x6	40.0	Gasoline	2200
Craig	Craig Tractor Co., Guardian Bldg., Cleveland, Ohio	Wheel	Beaver	4-4½x6	36.1	Gasoline	....
	Crown Iron Works—See Nilson.						
Dakota	Pope Mfg. Co., Watertown, S. Dakota	Wheel	Dorman	4-4½x6	36.1	Gasoline	1750

Please mention The Automobile Trade Directory

Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Trac-tion	Make of Engine	No. of Cylinders Bore and Strokes of Engine	N.A.C.C. H.P.	Fuel	Price
	Dayton-Dowd Co.—See Leader.						
Depue A	Depue Brothers Mfg. Co., (West Clinton), Clinton, Iowa.....	Wheel	Buda	4-4½x6	32.4	Gasoline	\$2500
	Dessinger & Bro. Co., C. H. A.—See Capital.						
Dill	Dill Tractor Mfg. Co., Little Rock, Ark.....	Wheel	Continental	4-4½x5½	32.4	Gasoline	2480
Do-It-All	Do-It-All Tractors Corp., 33 Park Place, New York, N. Y.....	Wheel	Own	1-4½x5	8.1	Gasoline	595
Do-It-All	Do-It-All Tractors Corp., 33 Park Place, New York, N. Y.....	Wheel	Own	1-2½x2½	2.5	Gasoline	225
	Electric Wheel Co.—See Allwork.						
E. B. 12-20	Emerson-Brantingham Implement Co., 2723 University Ave., S. E., Minneapolis, Minn.....	Wheel	Own	4-4½x5	36.1	Kerosene	....
Eagle F12-22	Eagle Mfg. Co., 624 Winnebago Street, Appleton, Wis.....	Wheel	Own	2-7 x8	39.6	Kerosene	1100
Eagle F16-30	Eagle Mfg. Co., 624 Winnebago Street, Appleton, Wis.....	Wheel	Own	2-8 x8	51.5	Kerosene	1850
Elgin	Elgin Tractor Corp., Piqua, Ohio.....	Wheel	Erd.	4-4 x6	25.6	(Gasoline Kerosene)	1385
	Evans Mfg. Co.—See Hudson.						
Fageol 9-12	Fageol Motors Co., 107th Ave. & Hollywood Blvd., Oakland, Cal.....	Wheel	Lycoming	4-3½x5	19.6	(Gasoline Distillate)	1525
Farm Horse B 18-30	Farm Horse Traction Works, Guttenburg, Iowa ...	Wheel	Climax	4-5 x6½	40.0	(Gasoline Kerosene)	1885
	Farm Power & Sales Co.—See Common Sense.						
Farquhar 15-25	Farquhar Co., A. B., York, Pa.....	Wheel	Buda	4-4½x6	32.4	(Gasoline Kerosene)	....
Farquhar 4-30	Farquhar Co., A. B., York, Pa.....	Wheel	Own	4-6 x8	57.6	(Gasoline Kerosene)	....
Farquhar 4-40	Farquhar Co., A. B., York, Pa.....	Wheel	Own	4-7 x8	78.4	(Gasoline Kerosene)	....
Fitch 4	Four Drive Tractor Co., 949 E. Maple St., Big Rapids, Mich.....	Wheel	Climax	4-5 x6½	40.0	Kerosene	....
Flour City 20-35	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn.....	Wheel	Own	4-5½x6	44.1	Kerosene	....
Flour City 30-50	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn.....	Wheel	Own	4-6½x7	62.5	Kerosene	....
Flour City 40-70	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn.....	Wheel	Own	4-7½x9	90.0	Kerosene	....
Flour City, Jr. 14-24	Kinnard & Sons Mfg. Co., Bryant & 44th Ave., N., Minneapolis, Minn.....	Wheel	Own	4-6 x5	40.0	Kerosene	....
	Ford & Son, Henry.—See Fordson.						
Fordson	Ford Motor Co. of Delaware, Elm St. (Tractor Division), Dearborn, Mich.....	Wheel	Own	4-4 x5	25.6	Kerosene	625
Fox 20-40	Fox River Tractor Co., Rankin & Commercial Sts., Appleton, Wis.....	Wheel	Own	4-5½x7½	48.4	Gasoline	....
	Four Drive Tractor Co.—See Fitch.						
Franklin G	Franklin Tractor Co., Greenville, Ohio	Crawler	Climax	4-5 x6½	40.0	Gasoline	....
Franklin G-2	Franklin Tractor Co., Greenville, Ohio, ...	Crawler	Climax	4-5 x6½	40.0	Gasoline	....
Frick A	Frick Co., Waynesboro, Pa.....	Wheel	Erd.	4-4 x6	25.6	Kerosene (Gasoline)	....
Frick C	Frick Co., Waynesboro, Pa.....	Wheel	Beaver	4-4½x6	32.1	(Gasoline Kerosene)	....
Fulton	Fulton Tractor Mfg. Co., Anderson Ind.....	Wheel	Waukesha	4-3½x5½	22.5	Gasoline	1275
G. O. G	General Ordnance Co., Derby, Conn., also Cedar Rapids, Iowa.....	Wheel	Waukesha	4-4½x5½	32.4	(Gasoline Kerosene)	1485
	General Ordnance Co.—See G. O.						

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Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	H.P.	Fuel	Price
Grain Belt G	Grain Belt Mfg. Co., 1202 Seventh Ave., N. Fargo, N. D.	Wheel	Waukesha	4-4½x6¾	36.1	Gasoline	\$2150
Gray 18-36	Gray Tractor Co., 30th Ave., S. E., & N. P. R. R., Minneapolis, Minn.	Wheel	Waukesha	4-4½x6¾	36.1	Gasoline	2250
Great Western	Great Western Tractor Co., First Ave. & 31st St., Council Bluffs, Iowa.	Wheel	Beaver	4-4½x6	36.1	Kerosene	....
Hart-Parr 30	Hart-Parr Co., Lawler St., Charles City, Iowa.	Wheel	Own	2-8½x7	33.8	Kerosene	1495
Hart-Parr 20	Hart-Parr Co., Lawler St., Charles City, Iowa.	Wheel	Own	2-5½x6½	22.0	Kerosene	995
Heider C 12-20	Rock Island Plow Co., 600 Second Ave., Rock Island, Ill.	Wheel	Waukesha	4-4½x6¾	32.4	{Gasoline Kerosene	....
Heider D 9-16	Rock Island Plow Co., 600 Second Ave., Rock Island, Ill.	Wheel	Waukesha	4-4½x5¾	28.9	{Gasoline Kerosene	....
	Holt Mfg. Co.—See Caterpillar.						
Huber Light Four 12-25	Huber Mfg. Co., Marion Ohio.	Wheel	Waukesha	4-4½x5¾	32.4	{Gasoline Kerosene	1185
Huber-Super Four 15-30	Huber Mfg. Co., Marion, Ohio.	Wheel	Midwest	4-4½x6	32.4	Gasoline	1885
Hudson L	Evans Mfg. Co., Hudson, Ohio.	Wheel	Buda	4-4½x6	32.4	Gasoline	....
Illinois	Illinois Tractor Co., Lincoln St., Bloomington, Ill.	Wheel	Climax	4-5 x6½	40.0	{Gasoline Kerosene	2500
Imperial 40	Imperial Machine Co., 1611 Central Ave., Minneapolis, Minn.	Wheel	Own	4-7½x9	90.0	{Gasoline Kerosene	5000
Indiana	Indiana Silo & Tractor Co., Anderson, Ind.	Wheel	Le Roi	4-3½x4½	15.6	Gasoline	....
International 15-30	International Harvester Co. Harvester Bldg., Chicago, Ill.	Wheel	Own	4-5½x8	44.1	Kerosene	1750
International 8-16	International Harvester Co. Harvester Bldg., Chicago, Ill. See also Titan.	Wheel	Own	4-4½x5	28.9	Kerosene	900
J T-N	J.T. Tractor Co., 1515 Fairfield Ave., Cleveland, Ohio	Crawler	Chief	4-4½x6	36.1	{Gasoline Kerosene	3485
Keck-Gonnerman	Kansas City Hay Press Co.—See Prairie Dog.						
	Keck-Gonnerman Co., 601 W. Fourth St., Mt. Vernon, Ind.	Wheel	Own	2-7½x8	42.1	{Gasoline Kerosene	1650
Kohl	Kinnard & Sons Mfg. Co.—See Flour City.						
	Kohl Tractor Co., 7507 Linwood Ave., Cleveland, Ohio.	Wheel	Beaver	4-4½x6	36.1	Kerosene	2250
La Crosse M	Oshkosh Tractor Co., La Crosse, Wis.	Wheel	Own	2-4 x6	12.8	Kerosene	650
La Crosse H	Oshkosh Tractor Co., Front & King Sts., La Crosse, Wis.	Wheel	Own	2-6 x7	20.0	Kerosene	985
Lang	Lang Tractor Co., Palace Bldg., Minneapolis, Minn.	Wheel	Climax	4-5½x6	48.4	{Gasoline Kerosene	1485
Lauson 15-30	Lauson Mfg. Co., John, W. Monroe St., New Holstein, Wis.	Wheel	Beaver	4-4½x6	36.1	Kerosene	1985
Lauson	Lauson Mfg. Co., John, W. Monroe St., New Holstein, Wis.	Wheel	Beaver	4-4½x6	36.1	Kerosene	2225
Lauson 12-25	Lauson Mfg. Co., John, W. Monroe St., New Holstein, Wis.	Wheel	Midwest	4-4½x5½	30.2	Gasoline	1495
Leader G 13-35	Dayton-Dowd Co., Second & York Sts., Quincy, Ill.	Crawler	Climax	4-5 x6	40.0	Kerosene	2775
Leader N 16-32	Dayton-Dowd Co., Second & York Sts., Quincy, Ill.	Wheel	Climax	4-5 x6	40.0	Kerosene	1985
Little Giant B	Little Giant Co., 199 Rock St., Mankato, Minn.	Wheel	Own	4-5½x6	44.1	Kerosene	3300
Little Giant A	Little Giant Co., 199 Rock St., Mankato, Minn.	Wheel	Own	4-4½x5	28.9	Kerosene	2200
Mark 6	Scientific Farming Machinery Co., Basting Block, Minneapolis, Minn.	Wheel	Buda	4-4½x6	32.4	{Gasoline Kerosene	1800

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Tractors (Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Master Jr. 10	Master Tractor Co., Lumber Exchange Bldg., Minneapolis, Minn.	Wheel	Le Roi	4-3½x4½	16.9	Gasoline	\$600
	Midwest Engine Co. See Utilitor.						
Mid-West A	Agrimotor Mfg. Co., 421 N. Water St., Wichita Kans.	Wheel	Gile	2-5 x6½	20.0	Gasoline	1085
Minneapolis 12-25	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-4½x7	32.4	Kerosene	1000
Minneapolis 17-30	Minneapolis Threshing Machine Co., Hopkins, Minn.	Wheel	Own	4-4½x7	36.1	Kerosene	1850
Monarch 30-20	Monarch Tractor Co., Watertown, Wis.	Crawler	Beaver	4-4½x6	36.1	(Gasoline Kerosene)	3500
Moline D	Moline Plow Co., Moline, Ill.	Wheel	Own	4-3½x5	19.6	Gasoline	990
Motox	Wabash Tractor Co., Wabash, Ind.	Wheel	Buda	4-4½x6	32.4	Gasoline	2250
N. B.	New Britain Machine Co., Chestnut St., New Britain, Conn.	Wheel	Own	2-2½x4	6.05	Gasoline	425
New Age D-4	Sutherland Mfg. Co., 125-29 Fifth Ave., S., Minneapolis, Minn.	Wheel	Beaver	4-4½x6	32.4	Kerosene	....
Nilson Senior	Crown Iron Works, 1229 Tyler St. N. E., Minneapolis, Minn.	Wheel	Waukesha	4-5 x6¼	40.0	(Gasoline Kerosene)	2475
Ohio B	Ohio General Tractor Co., Citizens Bldg., Cleveland, Ohio.	Crawler	Buda	4-4½x5½	28.9	(Gasoline Kerosene)	1800
Peoria	Peoria Tractor Corp., of Iowa, 1129-45 W. Washington St., Peoria, Ill.	Wheel	Climax	4-5 x6½	40.0	Kerosene	1785
Pioneer 13-36	Pioneer Tractor Mfg. Co., Carimona St., Winona, Minn.	Wheel	Own	4-5½x6	48.4	(Gasoline Kerosene)	....
Pioneer 30	Pioneer Tractor Mfg. Co., Carimona St., Winona, Minn.	Wheel	Own	4-7x8	78.4	Gasoline	....
Plowman 15-30	Plowman Tractor Co., E. Fourth St. & Limits, Waterloo, Iowa.	Wheel	Buda	4-4½x6	32.4	(Gasoline Kerosene)	1995
	Pope Mfg. Co.—See Dakota.						
Port Huron A	Port Huron Engine & Thresher Co., 3401-3559 24th St., Port Huron, Mich.	Wheel	Chief	4-4½x6	36.1	(Gasoline Kerosene)	1700
Prairie Dog L	Kansas City Hay Press & Tractor Co., Fourth St. Viaduct, Kansas City, Mo.	Wheel	Waukesha	4-3¾x5½	22.5	Gasoline	....
Prairie Dog D	Kansas City Hay Press & Tractor Co., Fourth St. Viaduct, Kansas City, Mo.	Wheel	Waukesha	4-4½x6	32.4	(Gasoline Kerosene)	....
Reed A	Reed Foundry & Machine Co., Kalamazoo, Mich.	Wheel	Waukesha	4-4½x6¾	32.4	(Gasoline Kerosene Distillate)	....
Reed B	Reed Foundry & Machine Co., Kalamazoo, Mich.	Wheel	Waukesha	4-5 x6	40.0	(Gasoline Kerosene Distillate)	....
Reliable	Reliable Tractor & Engine Co., Portsmouth, Ohio.	Wheel	Own	2-6x7	28.2	Kerosene	88
	Rock Island Plow Co.—See Heider.						
	Russell & Co.—See Boss, also Boss Giant.						
Samson M	Samson Tractor Co., Industrial Ave., Janesville, Wis.	Wheel	Northway	4-4 x5½	25.6	Gasoline	....
Samson Sieve-Grip	Samson Sieve-Grip Tractor Co., 1104 S. Aurora St. Stockton, Cal.	Wheel	Own	4-4½x6¾	28.9	(Gasoline Distillate)	18
Sanducky A	Cameron Motors Corp., 2 Columbus Circle, New York, N. Y.	Wheel	Own	4-3x4½	14.4	(Gasoline Kerosene Distillate)	....
	Scientific Farming Machinery Co.—See Mart 6						
	Shaw Ass'n.—See Chicago						

Please mention The Automobile Trade Directory

Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.C. H.P.	Fuel	Price
Shelby C 9-18	Shelby Tractor & Truck Co., Shelby, Ohio.....	Wheel	Waukesha	4-3 $\frac{1}{2}$ x5 $\frac{1}{4}$	22.5	Gasoline	.....
Shelby D 15-30	Shelby Tractor & Truck Co., Shelby, Ohio.....	Wheel	Beaver	4-4 $\frac{1}{2}$ x6	26.1	Kerosene	.....
Short Turn W	Short Turn Tractor Co., Globe Bldg., Minneapolis, Minn.....	Wheel	Beaver	4-4 $\frac{1}{2}$ x6	26.1	Kerosene	\$1500
Simplicity 14-26	Turner Mfg. Co., 230 Lake St., Port Washington, Wis.....	Wheel	Buda	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	28.9	Gasoline Kerosene	1395
Square Turn A	Square Turn Tractor Co., Norfolk, Neb.....	Wheel	Climax	4-5 x5 $\frac{1}{2}$	40.0	Gasoline Kerosene	2075
Stewart A	Stewart Tractor Co. of Wisconsin, Waupesa, Wis.	Wheel	Waukesha	4-4 $\frac{1}{2}$ x6 $\frac{1}{2}$	32.4	Gasoline Kerosene	5000
Stewart B	Stewart Tractor Co. of Wisconsin, Waupesa, Wis.	Wheel	Waukesha	4-3 $\frac{1}{2}$ x5 $\frac{1}{2}$	22.5	Gasoline Kerosene	2750
Stinson 4-E	Stinson Tractor Co., 1703 16th St., Superior, Wis....	Wheel	Beaver	4-4 $\frac{1}{2}$ x6	26.1	Gasoline Kerosene	.....
Stinson Super E	Stinson Tractor Co., 1703 16th St., Superior, Wis.	Wheel	Stearns	4-5 x5 $\frac{1}{2}$	40.0	Gasoline Kerosene	.....
Stone	Stone Tractor Mfg. Co., 11th and Whitaker Sts., Tezakana, Texas.....	Wheel	Beaver	4-4 $\frac{1}{2}$ x6	32.4	Gasoline Kerosene	2250
Strite	Strite Tractor Co., 307 Third St., S., Minneapolis, Minn.....	Wheel	Climax	4-5 x5 $\frac{1}{2}$	40.0	Gasoline Kerosene	.....
	Sutherland Mfg. Co.—See New Age; also, World						
Titan 10-30	International Harvester Co. Harvester Bldg., Chicago, Ill.....	Wheel	Own	2-6 $\frac{1}{2}$ x8	25.4	Kerosene	900
Topp-Stewart	Topp-Stewart Tractor Co., Clintonville, Wis.....	Wheel	Waukesha	4-4 $\frac{1}{2}$ x6 $\frac{1}{2}$	36.1	Gasoline	.....
Townsend 15-30	Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.....	Wheel	Own	2-7x8	29.2	Gasoline Kerosene	1485
Townsend 25-50	Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.....	Wheel	Own	2-8 $\frac{1}{2}$ x10	57.4	Gasoline Kerosene	2750
Townsend 10-20	Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.....	Wheel	Own	2-6 $\frac{1}{2}$ x7	33.8	Gasoline Kerosene	895
T. B.	Traylor Engr. & Mfg. Co., (Truck and Tractor Div.) Cornwells, Pa.....	Wheel	Le Roi	4-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	15.6	Gasoline	715
Triumph	Triumph Tractor & Truck Co., 110-16 Southwest Blvd., Kansas City, Mo.....	Wheel	Erd	4-4 $\frac{1}{2}$ x6	26.1	Gasoline Kerosene	2490
Trudsar 10	Buckeye Mfg. Co., 1801-09 Columbus Ave., Anderson, Ind.....	Crawler	Waukesha	4-8x6 $\frac{1}{2}$	40.0	Gasoline Kerosene	.....
	Turner Mfg. Co.—See Simplicity.						
Twin City 12-20	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.....	Wheel	Own	4-4 $\frac{1}{2}$ x6	28.9	Kerosene Gasoline	1580
Twin City 20-35	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.....	Wheel	Own	4-5 $\frac{1}{2}$ x6 $\frac{1}{2}$	48.4	Gasoline Kerosene	3175
Twin City 40-65	Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn.....	Wheel	Own	4-7 $\frac{1}{2}$ x9	75.0	Kerosene Gasoline	5250
Two-Way A	Two-Way Plow Tractor Co., Lindsey Bldg., Dayton, Ohio.....	Wheel	Buda	4-4 $\frac{1}{2}$ x6	32.4	Gasoline Kerosene	2000
Uncle Sam 20-30	U. S. Tractor & Machinery Co., 100 Tayco St., Menasha, Wis.....	Wheel	Beaver	4-4 $\frac{1}{2}$ x6	36.1	Gasoline Kerosene	.....
Utilizer See page 14	Midwest Engine Co., Indianapolis, Ind.....	Wheel	Own	1-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	4.9	Gasoline	380
Yelle 12-24	Yelle Motors Corp., 109 Yelle Place, Moline, Ill.....	Wheel	Own	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	27.2	Kerosene	1785
Victory	Victory Tractor Co., Greensburg, Ind.....	Wheel	Grey	4-8 $\frac{1}{2}$ x8	19.6	Gasoline	1350
Victory	Victory Tractor Co., Greensburg, Ind.....	Wheel	Waukesha	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	29.9	Gasoline	1750
Wells K	Case Plow Works Co., J. I. Sixth & Mead Sts., Racine, Wis.....	Wheel	Own	4-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	28.9	Gasoline Kerosene	.....
Waterloo Boy N	Waterloo Gasoline Engine Co., Miles St., Waterloo, Iowa.....	Wheel	Own	2-6 $\frac{1}{2}$ x7	33.8	Kerosene	.....

Please mention The Automobile Trade Directory

Tractors—(Continued)

Brief Specifications, Prices and Names and Addresses of Manufacturers

Model No. or Name	Manufacturer's Name and Address	Type of Traction	Make of Engine	No. of Cylinders Bore and Stroke of Engine	N.A.C.O. H.P.	Fuel	Price
Wetmore 12-25	Wetmore, H. A., W. Second & Main Sts., Sioux City, Iowa.....	Wheel	Waukesha	4-4 x5½	28.6	(Gasoline (Kerosene	1585
Whitney 9-18	Post-Whitney Co., 2731 Prospect Ave., Cleveland and Upper Sandusky, Ohio.....	Wheel	Own	2-5½x8½	24.2	Gasoline	....
Wisconsin E 16-30	Wisconsin Farm Tractor Co., Water St., Sauk City, Wis.....	Wheel	Climax	4-5 x6½	40.0	(Gasoline (Kerosene	2250
Wisconsin H 22-40	Wisconsin Farm Tractor Co., Water St., Sauk City, Wis.....	Wheel	Waukesha	4-5 x6½	40.0	(Gasoline (Kerosene	2450
World	Sutherland Mfg. Co., 125-29 Fifth Ave., S., Minneapolis, Minn.....	Wheel	Beaver	4-4½x6	36.1	Kerosene	....
Yuba 25-40	Yuba Mfg. Co., 433 California St., San Francisco, Cal.	Crawler	Wisconsin	4-5½x7	52.9	Distillate	4650
Yuba 15-25	Yuba Mfg. Co., 433 California St., San Francisco, Cal.	Crawler	Waukesha	4x4½x6	28.9	Distillate	3100
Zelle 12-35	Zelle Tractor Co., Merchants-Laclede Bldg., St. Louis, Mo.....	Wheel	.....	4-4½x5½	28.9	(Gasoline (Kerosene	....

Please mention The Automobile Trade Directory

SECTION 2

Accessories, parts, materials and supplies for automobiles, commercial vehicles and tractors. Specialties for Ford cars; also machinery, tools, shop equipment and supplies for factories, garages and repair shops.

EVERYTHING in this section is listed alphabetically under the NOUN.

For example: "Pressed Steel Frames" are listed under "Frames,"—"Roller Bearings" under "Bearings."



"NORMA" PRECISION BALL BEARINGS

(PATENTED)



Standardization on **"NORMA"** Precision Bearings by all makers of high-grade ignition apparatus and lighting generators, is an assurance of serviceable electrical apparatus. But—accidents will happen. And—to provide against them with the least possible inconvenience to car, truck and tractor users—**"NORMA"** Distributors, conveniently located as indicated above, carry complete stocks and can give prompt service to electrical repair men.

*See that your electrical apparatus is **"NORMA"** equipped.*

THE NORMA COMPANY
OF AMERICA

Anable Avenue
Long Island City
New York

Ball, Roller, Thrust and Combination Bearings

SECTION II

Accessories, Parts, Machinery and Tools

Every product listed in this section is classified
alphabetically under the NOUN or principal word.

- ABRASIVE PAPERS**—See Paper, Emery and Sand
- ABRASIVE WHEEL TRUERS**—See Dressers, Emery Wheel
- ABRASIVE WHEELS**—See Wheels, Grinding
- ACCELERATOR PEDALS**—See Pedals, Special Accelerator
- ACCELERATOR PEDALS FOR FORDS**—See Accelerators, Foot
- ACCELERATORS, FOOT**—See Pedals, Special Accelerator
- ACCELERATORS, Foot, for Fords**
(Foot pedals for controlling throttle)
- Adamson Mfg. Co., East Palestine, O.
- Allen Co., 23-25 Broadway, Camden, N. J.
- American Automatic Devices Co., Chicago, Ill. "Get-A-Way."
(See page 251.)
- Apco Mfg. Co., 703 Eddy St., Providence, R. I.
- Auto Metal Parts Co., 624 E. Locust St., Des Moines, Iowa. (See page 775.)
- B. M. W.—See Genesee Auto Supply Co.
- Badger Mfg. Corp., Milwaukee, Wis.
(See page 171.)
- Bull Dog—See Thomas Mfg. Co.
- Comfort Motor Machine Co., 715 Galapago St., Denver, Colo. "Simplex."
- Cooper Mfg. Co.—See Fulton Co.
- Detroit Starter Co., 612 E. Jefferson St., Detroit, Mich. "Speederator."
- Donlin Auto Co., C. A., Hopkins, Mo.
- Eckhouse & Co., Walter, 618-23 S. Michigan Blvd., Chicago, Ill. (Sales Department for Webber Co., P. H., Hoopenton, (See page opposite Title Page.)
- Ellison Brass Mfg. Co., Jamestown, N. Y.
- Ewald—See Zinke Co.
- F. W. S.—See Stewart Mfg. Corp.
- Fulton Co., 75th & National Aves., Milwaukee, Wis. (Distributor.)
(See pages 569 to 574.)
- Gasco—See General Auto Specialty Co.
- Geneco Mfg. Co., 888 S. Pierce St., Milwaukee, Wis. (See page 107.)
- General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."
- Genesee Auto Supply Co., Genesee, Ill. "B. M. W."
- Get-A-Way—See American Automatic Devices
- Heaton & Ault, 6245 Greenwood Ave., Chicago, Ill. "Red-I-Fit."
- C. M.—See Mewshaw, J. C.
- See Mfg. Co., F. D., 24 High St., Beatrice, Neb.
- Unfield Mfg. Co., 510 First Ave., West Haven, Conn.
- Wason, G. D., Pocahontas, Ia.
- Mechanical Utilities Corp., 1348 N. Clark St., Chicago, Ill. (See page 401.)
- Mewshaw, J. C., Vickers Bldg., Baltimore, Md. "J. C. M."
- Michon Mfg. Co., 124 N. Erie St., Toledo, O.
- Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
- New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich.
- Nifty—See Sapp, Will A.
- Perkins-Campbell Co., Cincinnati, O.
(See page 209.)
- Perrin Mfg. Co., 965 Woodward Ave., Detroit, Mich.
- Presto—See R. & R. Mfg. Co.
- R. & R. Mfg. Co., 144 S. Delaware St., Indianapolis, Ind. "Presto."
- Red-I-Fit—See Heaton & Ault.
- Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
- Rice Co., C. H., 213 Smith Bldg., Cherokee, Ia. "Sense."
- Romort Mfg. Co.—See Zinke Co.
- Sapp, Will A., Elgin, Neb. "Nifty."
- Sense—See Rice Co.
- Simplex—See Comfort Motor Machine Co.
- Speederator—See Detroit Starter Co.
- Standard Motor Products Mfg. Corp., 908 W. Chicago Ave., Chicago, Ill. "Triumph."
- Star Specialty Mfg. Co., 237 W. Erie St., Chicago, Ill. (See page 759.)
- Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill. "F. W. S."
- Sterling—See Republic Auto Parts Co.
- Thomas Mfg. Co., W. N., Main St., Spencer, Ia. "Bull Dog." (See page 572.)
- Triumph—See Standard Motor Products Mfg. Corp.
- U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.
- Victor Products Co., Springfield, O.
- W. & C.—See Eckhouse & Co.
- Webber & Co.—See Eckhouse & Co.
- Williams Bros. Aircraft Corp., San Francisco, Cal. (See page 71.)
- Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald.")
(See pages 772 and 773.)
- ACCESSORY CABINETS**—See Cabinets, Accessory
- ACCIDENT CASES**—See Cases, Medical Emergency.
- ACCOUNTING BOOKS**—See Books, Accounting
- ACCOUNTING SYSTEMS**—See Books, Accounting
- ACETYLENE BRAZING TORCHES**—See Torches, Acetylene
- ACETYLENE BURNER CLEANERS**—See Cleaners, Acetylene
- ACETYLENE BURNERS**—See Burners, Acetylene Lamp

Everything is listed under the NOUN or principal word

ACETYLENE GAS PURIFIERS—See Purifiers, Acetylene Gas

ACETYLENE GENERATORS—See Generators, Acetylene

ACETYLENE HEADLIGHTS—See Lamps or Headlights, Acetylene

ACETYLENE HEADLIGHTS, TRACTOR—See Headlights, Tractor Acetylene

ACETYLENE LAMP BURNERS—See Burners, Acetylene Lamp

ACETYLENE LAMP CONNECTORS—See Connectors, Acetylene Lamp

ACETYLENE LAMP LIGHTERS—See Lighters, Acetylene Lamp

ACETYLENE LAMPS—See Lamps, or Headlights, Acetylene

ACETYLENE PRESSURE REGULATORS—See Regulators, Acetylene Pressure

ACETYLENE TANK KEYS—See Keys, Acetylene

ACETYLENE TANK TRUCKS—See Trucks, Acetylene and Oxygen Tank

ACETYLENE TANKS—See Tanks, Acetylene

ACETYLENE WELDING TORCHES—See Torches, Acetylene Welding

ACID, BATTERY—See Electrolyte, Battery

ACID, CLEANING—See Compounds, Rust Preventing

ACID, SOLDERING—See Flux, Soldering

ADAPTERS, CHASSIS—See Converters, Chassis

ADAPTERS, Electric Lamp

(For converting gas or oil lamps into electric lamps)

Adams & Westlake Co., Chicago, Ill. "Adlake." (See page 507.)

Adlake—See Adams & Westlake Co.

Chicago Electric Mfg. Co., 2801-19 S. Halsted St., Chicago, Ill. "Handy."

Gil-Bo—See Metal Specialties Mfg. Co.

Handy—See Chicago Electric Mfg. Co.

Manhattan Electrical Supply Co., 17 Park Place, New York, N. Y.

Metal Specialties Mfg. Co., 335-52 N. Kedzie Ave., Chicago, Ill. "Gil-Bo." (See page 503.)

Michon Mfg. Co., 124 N. Erie St., Toledo, O.

Miller Mfg. Co., E. L. 22 W. Third St., Kansas City, Mo. "Tillery."

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 221.)

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

S-H—See Stuart-Howland Co.

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)

Stuart-Howland Co., 131-41 Federal St., Boston, Mass. "S-H."

Tillery—See Miller Mfg. Co.

Williams Mfg. Co., Clarksburg, W. Va. "Wilson."

Wilson—See Williams Mfg. Co.

ADAPTERS, STORAGE BATTERY—See Connectors, Storage Battery

ADJUSTABLE VALVE LIFT RODS—See Rods, Adjustable Valve Lift

ADJUSTABLE WRENCHES—See Wrenches

ADJUSTERS, BELT, FOR FORDS—See Adjusters, Fan Belt

ADJUSTERS, Brake

Auto-Brake Adjuster Co., Schofield Bldg., Cleveland, O. "Cole."

Cole—See Auto-Brake Adjuster Co.

ADJUSTERS, Brake and Reverse Band for Fords

(Device to permit brake and reverse band to be adjusted from the outside of the transmission case)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Distributor East of the Mississippi River for Standley Adjusters.) (See page 138B.)

Michon Mfg. Co., 124 N. Erie St., Toledo, O.

Standley Skid Chain Co., Boone, Iowa. (See page 138B.)

Zimmerman Co., H. J., Pekin, Ill.

ADJUSTERS, CARBURETOR OR DASH CONTROL FOR FORDS—See Controls, Dash Carburetor

ADJUSTER, DASH CONTROL FOR FORDS—See Controls, Dash Carburetor

ADJUSTERS, Fan Belt, for Fords

(Spring attachment for keeping a uniform and constant tension on belt so that when adjustment is once made it will be automatically maintained)

Champion—See Dexter Specialty Co.

Dexter Specialty Co., 113 N. Dexter St., Ionia, Mich. "Champion."

ADJUSTERS, RIM—See Tools, Demountable Rim

ADJUSTERS, TIRE—See Tools, Tire

ADJUSTERS, TIRE CHAIN—See Tighteners, Tire Chain

ADJUSTERS, VALVE—See Rods, Adjustable Valve Lift

ADJUSTERS, Valve Stem, for Fords

(For taking up wear and play between valve stem and push rod—See also Rods, Push)

Apco Mfg. Co., 703 Eddy St., Providence, R. I.

Bowen Products Corp., Auburn, N. Y. "Empress." (See page 313.)

Chadbourne Sales Co., 300-13 Tenth Ave., S., Minneapolis, Minn. "Townsan."

Everything is listed under the NOUN or principal word



RETAIL PRICE
\$3.00
AND WORTH IT

OTHER PATENTS PENDING

What are Sales?

A sale consists in convincing the prospective customer that an article is worth more to him than the money it represents. Usually, the salesman must do the convincing.

With the Williams Accelerator, the customer convinces himself. The three easy connections—hand throttle, toe board and carburetor lever—prove to him that he can install the Williams Accelerator in 7 minutes. The absence of complicated springs and levers needs no argument; it is apparent. The simplicity of operation and sturdiness of construction does not have to be explained; the customer sees it for himself.

The minimum effort required in selling Williams Accelerators accounts for their unusual success in the past. It also insures success in the future. Dealers should order through their jobbers. Write us for complete information and samples of dealers' helps.



The pedal projects through a small slit in the floor mat

Manufactured by

WILLIAMS BROS. AIRCRAFT CORP.
SAN FRANCISCO

WILLIAMS ACCELERATOR

for FORD CARS

Please mention The Automobile Trade Directory

ADJUSTERS, Valve Stem, for Fords (Continued)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Empress—See Bowen Products Corp.
 Efemco—See Foster, Merriam & Co.
 Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)
 Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.
 Midway Mechanical Co., St. Paul, Minn.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 P. & L.—See Parkhurst-Lavender Auto & Machine Co.
 Parkhurst-Lavender Auto & Machine Co., Webster City, Ia. "P. & L."
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Sterling—See Republic Auto Parts Co.
 Townsman—See Chadbourn Sales Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

AGITATORS, MIXTURE—See Mixers, Fuel

AIR BAGS—See Bags, Steam Tire Curing

AIR BRAKES—See Brakes, Air

AIR CLEANERS—See Cleaners, Air

AIR COCKS—See Cocks, Spring Key; also Cocks, Pet

AIR COMPRESSORS—See Compressors, Garage Air

AIR GAGES—See Gages, Steam

AIR LINE TIRE CONNECTIONS—See Connections, Air System Tire

AIR MOISTENERS—See Moisteners, Air or Mixture

AIR NOZZLES—See Nozzles, Air Upholstery Cleaning

AIR PUMPS—See Pumps

AIR RELEASING TOOLS—See Tools, Tire Deflating

AIR STARTERS—See Starters, Compressed Air

AIR VALVES—See Connections, Air System Tire

AIR WASHERS—See Cleaners, Air

ALARMS, BOILER—See Columns, Water

ALARMS, Low Oil, for Fords

Dickerson Auto Appliance Co., Warrentown, Va.
 Handy Mfg. Co., 15 Library St., Grand Rapids, Mich. (See page 75.)
 K. H. K.—See Kay Co.
 Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K."

ALARMS, Tire

(For sounding an alarm when tires are under or over inflated)

Gem—See Safety Tire Signal Co.
 Harris Accessory Co., Greenville, S. C. (See page 415.)
 Pardue, John L. (Wellston Sta.), St. Louis, Mo.
 Safety Tire Signal Co., 655 12th St., Boulder, Colo. "Gem."
 Terpening, E. A., Mokena, Ill.

ALCOHOL, Denatured

(For use in Radiators to prevent water freezing; for other Anti-Freezing Mixtures—See Compounds, Anti-Freezing)

Berg Industrial Alcohol Co., David, Ellicott Sq. Bldg., Buffalo, N. Y.
 Jefferson Distilling & Denaturing Co. (Harvey), New Orleans, La. "Radico."
 Kentucky Distillery & Warehouse Co., 56 Pine St., New York, N. Y. "Solox."
 Phillips, C. F., Little Bldg., Lincoln, Neb.
 Pyro—See U. S. Industrial Alcohol Co.
 Radico—See Jefferson Distilling & Denaturing Co.
 Solox—See Kentucky Distillery & Warehouse Co.
 U. S. Industrial Alcohol Co., 27 William St., New York, N. Y. "Pyro." (See page 73.)
 Woolner Distilling Co., ft. Spillman St., Peoria, Ill.

ALIGNERS, RUNNING GEAR—See Gages, Wheel Aligning

ALIGNING FIXTURES, MAGNETO—See Fixtures, Magneto Aligning and Testing for Fords

ALIGNING GAGES—See Gages, Wheel Aligning

ALIGNING JIGS—See Jigs, Piston Aligning.

ALIGNING JIGS—See Jigs, Connecting Rod Aligning

ALIGNING JIGS, CAMSHAFT—See Reamers and Jigs, Camshaft Aligning, for Fords

ALIGNING REAMERS, CAMSHAFT—See Reamers and Jigs, Camshaft Aligning, for Fords

ALLIGATOR WRENCHES—See Wrenches, Nut and Bolt

ALTERNATING CURRENT RECTIFIERS—See Rectifiers, Alternating Current

ALTITUDE INDICATING BAROMETERS—See Barometers, Altitude Indicating

ALUMINUM CASTINGS—See Castings, Aluminum

ALUMINUM MATTING—See Matting, Aluminum

ALUMINUM PAINTS—See Paints, Aluminum

Everything is listed under the NOUN or principal word

Leading Motor Manufacturers, Expert Engineers and Conscientious Dealers

USE AND RECOMMEND



Manufactured under U. S. Government Supervision

Denatured — 188 Proof — Highest Test
Makes the Ideal

Non-Freezing Solution
For Water-Cooled Motors

Always Uniform

Never Harmful

Ever Reliable

Contains no Benzol or other injurious ingredients. Beware of Denatured Alcohol containing Benzol which tends to injure rubber connections.

NO Corrosion of metal parts
 Salts to stimulate electrolysis
 Rotting of rubber connections
 Foul Odors as from glycerine

Origin and Quality Since Denatured Alcohol was first authorized in 1906, we have developed the use of PYRO ALCOHOL as the Ideal Non-Freezing Solution, and have steadfastly maintained the standard of quality established over 15 years ago.

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Packages and Sizes PYRO is sold in Extra Heavy Steel Drums and Triple Plate Tinned Cans. Drums uniformly contain 52 gallons. Cans containing 5 gallons are packed two to the crate. Cans containing 1 gallon are packed ten to the crate.

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Largest Producer in the World

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CHICAGO, 617 First Nat'l Bank Bldg.
 ST. LOUIS, 1434 North Broadway
 KANSAS CITY, MO., 1400 W. 10th St.
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In addition to the above, we carry warehouse stocks in over 85 other cities conveniently located.

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ALUMINUM, Sheet and Rod

(For Aluminum Castings—See Castings, Aluminum;
for Aluminum Tubing—See Tubing, Aluminum)

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.

U. S. A.—See United Smelting & Aluminum Co.
United Smelting & Aluminum Co., 188-89 Commerce St., New Haven, Conn. "U. S. A."

ALUMINUM SOLDER—See Solder, Aluminum

ALUMINUM TUBING—See Tubing, Aluminum

AMBULANCES, WRECKING—See Trucks,
Casters and Spare Wheels, Wrecking

**AMMETERS and VOLTMETERS,
Standard**

(For Switchboard and Electric Vehicle use; for
Pocket, Cowl or Dash Board Meters—See
Gages, Battery)

Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Hoyt Electrical Instrument Co., Pennacook, N. H.) (See page 75.)

General Electric Co., Schenectady, N. Y. (See page 697.)

Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.

Hickok Electrical Instrument Co., Cleveland, O.

Hoyt Electrical Instrument Co.—See Burton-Rogers Co.

Imp.—See Roller-Smith Co.

Jewell Electrical Instrument Co., 1648 Walnut St., Chicago, Ill.

Keystone Electrical Instrument Co., Wayne & Windrim Aves., Philadelphia, Pa.

Norton Electrical Instrument Co., Manchester, Conn.

Pignolet, Louis M., 78 Cortlandt St., New York, N. Y.

Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Reliance Instrument Co., 1185 W. Van Buren St., Chicago, Ill.

Roller-Smith Co., 9 Barclay St., New York, N. Y. "Imp." (See page 395.)

Weston Electrical Instrument Co., 16 Weston Ave., Newark, N. J. (See page 481.)

ANGLE BENDERS—See Benders, Angle

ANGLE STEEL—See Steel, Angle

ANGULAR BELTS—See Belts, V

ANNEALING—See Treating, Heat

ANNEALING FURNACES—See Furnaces,
Annealing

ANNEALING AND HEAT TREATING—
See Treating, Heat

**ANTI-CHATTERERS, Transmission
Band for Fords**

Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Velvet-Grip."

Velvet-Grip—See Mil-Mac Mfg. Co.

ANTI-DRAFT SHIELD—See Visors and
Rainshields, Top

ANTI-FREEZE, RADIATOR—See Alcohol,
Denatured; also Compounds, Anti-Freezing

ANTI-FREEZING SOLUTION—See Alcohol,
Denatured; also Compounds, Anti-Freezing

ANTI-FRICTION METAL—See Metals,
Bearing

**ANTI-RATTLERS, Brake Rod Clevis,
for Fords**

(See also Supports, Brake Rod)

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

American Auto Products Co., 1819 L St. N. W., Washington, D. C. "Little Giant."

Apco Mfg. Co., 708 Eddy St., Providence, R. I.

Fernald Mfg. Co., North East, Pa. "Little B-R-A-T-S." (See page 75.)

Little B-R-A-T-S—See Fernald Mfg. Co.
Handy Mfg. Co., 15 Library St., Grand Rapids, Mich. (See page 75.)

Little Giant—See American Auto Products Co.

ANTI-RATTLERS, Door

(Rubber or Spring Bumpers to prevent the rattling of
Car Doors)

Atwood Vacuum Machine Co., 180 N. Water St., Rockford, Ill.

Auto Brass Mfg. Co., 3514 S. Michigan Ave., Chicago, Ill.

Autoquip Mfg. Co., Rochester, N. Y.

Bailey Co., W. J., 401 Mulberry St., Newark, N. J. "C. B."

C. B.—See Bailey Co.

Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa.

Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Elm City—See Mersick & Co.

Fernald Mfg. Co., North East, Pa. "Little B-R-A-T-S." (See page 75.)

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 540.)

Frantzen—See Williams, Franklin.

Little B-R-A-T-S—See Fernald Mfg. Co.

Mersick & Co., C. S., 274-92 State St., New Haven, Conn. "Elm City." (See page 893.)

Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.

Ollard, James & Wm., 964 E. Third St., Williamsport, Pa. "S-O."

Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.

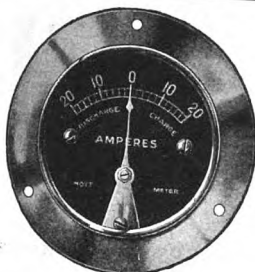
Rostand Mfg. Co., Milford, Conn.

S-O—See Ollard, James & Wm.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.

Everything is listed under the NOUN or principal word



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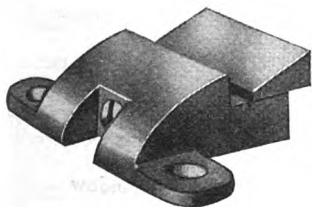
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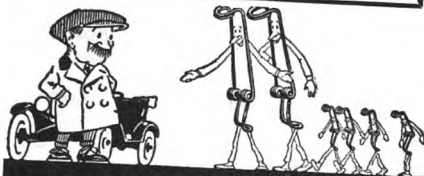
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ANTI-RATTLER FOR
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251 Jefferson St.

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First and Final Aids For Rattling Fords

Quick, sure and permanent cure for "rattleitis" and "blind staggers." Ford owners buy them on sight.

Steer - Aids save wear and tear on front wheels, improve steering and banish steering rod rattles for 50c a pair.

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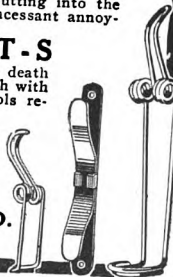
keep loose doors from "butting into the conversation" with their incessant annoying chatter for 25c a set.

Little B-R-A-T-S

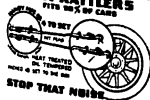
choke brake rod rattle to death for 50c a set of four. Attach with screwdriver. No other tools required.

Dealers— These "Sure Cures" sell like life preservers on a sinking ship. Order from your jobber today.

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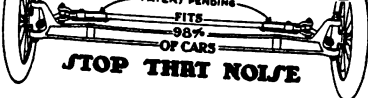


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ANTI-RATTLERS
FITS 90% OF CARS



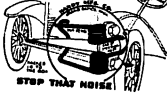
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STOP THAT NOISE

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FITS 90% OF CARS



STOP THAT NOISE

Anti-Rattlers for all cars. Tie Rod, Brake Rod, Steering Arm, Big Brake, Chevrolet Tie Rods, Ford Door, Chevrolet Silencers. Ford and Chevrolet Grease Retainers. Handy Tube Deflators.

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ANTI-RATTLERS, Door (Continued)

Stadco—See Stadeker Metal Specialty Co.
 Stadeker Metal Specialty Co., 810 S. Canal St., Chicago, Ill. "Stadco."
 Standard Motor Products Mfg. Corp., 908 W. Chicago Ave., Chicago, Ill.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributors.) (See page 81.)
 Ternstedt Mfg. Co., Detroit, Mich. (See Back Cover.)
 Waterhouse & Freeman Mfg. Co., 319 N. J. R. Ave., Newark, N. J.
 Williams, Franklin, 251 Jefferson St., Newark, N. J. "Frantzen." (See page 75.)

ANTI-RATTLERS, Door, for Fords

(Rubber or Spring Bumpers to prevent rattling of car doors)

Fernald Mfg. Co., North East, Pa. "Little B-r-a-t-s." (See page 75.)
 Handy Mfg. Co., 15 Library St., Grand Rapids, Mich. (See page 75.)
 Little b-r-a-t-s—See Fernald Mfg. Co.

ANTI-RATTLERS, MUD GUARD, FOR FORDS—See Braces, Mud Guard**ANTI-RATTLERS, OVERHEAD VALVE—See Silencers, Overhead Valve****ANTI-RATTLERS, Radius Rod, for Fords**

(Adjustable cap to take place of solid cap on end of radius rod to permit taking up wear and so prevent rattling)

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Dennis Shock Absorber Co., 304 W. 63d St., Chicago, Ill. (See page 775.)
 Edelmunn & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Peru Brass & Mfg. Co., Peru, Ind.
 Warren & Co., Frank R., 2214 Michigan Ave., Chicago, Ill.

ANTI-RATTLERS, Spark and Throttle Rod, for Fords

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

ANTI-RATTLERS, Spindle Arm, for Fords

(Small steel springs to place between spindle arm cross yoke end to prevent rattling)

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.

Dunham Co., Thomas, Aurora, Ill.

(See page 145.)
 Eclips Machine Co., Elmira, N. Y. (See page 439.)

Kraeuter & Co., Newark, N. J. (See page 643.)

Sanborn Mfg. Co., J. W., Hampstead, N. H.
 Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.

ANTI-RATTLERS, STEERING COLUMN, FOR FORDS—See Braces, Steering Column**ANTI-RATTLERS, Steering Rod, for Fords**

(Adjustable spring cap to take place of solid cap on end of steering rod to permit taking up wear and so prevent rattling)

American Auto Products Co., 340-44 S. Broadway, Denver, Colo. "Little Giants."
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.

B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."
 Fernald Mfg. Co., North East, Pa. "Steer-Aid." (See page 75.)

Handy Mfg. Co., 15 Library St., Grand Rapids, Mich. (See page 75.)

Little Giants—See American Auto Products Co.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Panther—See B. A. T. Co.
 S & H Anti Rattler Co., Liverpool, Pa.
 Steer-Aid—See Fernald Mfg. Co.
 Towle Mfg. Co., Portland, Me.

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

ANTI-RATTLERS, Window

Adco—See American Automatic Devices Co.
 American Automatic Devices Co., Chicago, Ill. "Adco." (See page 251.)

Attwood Brass Works, Grand Rapids, Mich. (See page 147.)

Autoquip Mfg. Co., Rochester, N. Y.
 Campbell Mfg. Co., 2835 Southwest Blvd., Kansas City, Mo. (See page 81.)

Cowles & Co., C., New Haven, Conn. (See page 451.)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

Edelmunn & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)

Elm City—See Mersick & Co.
 Mersick & Co., C. S., 274-82 State St., New Haven, Conn. "Elm City." (See page 893.)

Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.

Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributors.) (See page 81.)

Ternstedt Mfg. Co., Detroit, Mich. (See Back Cover.)

ANTI-SKIDS, TIRE—See Bands, Non-Skid Truck**ANTI-SQUEAK, BODY—See Lining, Body or Frame**

Everything is listed under the NOUN or principal word

KEASBEY & MATTISON COMPANY

Ambler :: Pennsylvania

Ambler Autbestos Brake Band Lining.
 Ambler Autbestos Clutch Facings Woven.
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 Ambler Autbestos Special Gaskets for All Purposes.
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427 Washington Avenue, N.....	Minneapolis, Minn.
217 Broadway	New York City, N. Y.
215 Union Building	Syracuse, N. Y.
1927 Market Street.....	Philadelphia, Penna.
119 South Street	Baltimore, Md.
Miners Bank Building.....	Wilkes Barre, Pa.
7th and Orange Streets.....	Wilmington, Del.
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400 Penobscot Building	Detroit, Mich.
25 Front Street, E.....	Toronto, Canada

Please mention The Automobile Trade Directory

ANVILS, Rim

(See also Tools, Rim Straightening)

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 661.)

APPLIERS, SKID-CHAIN—See Tools, Tire Chain Attaching**APRONS, RADIATOR SPLASH FOR FORDS—See Pans, Radiators Splash****APRONS, Wash**

Accurate Cover Co., 373 Canal St., New York, N. Y.

Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)

Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sales Department for Defiance Welding Co., Defiance, O. "Boko.")

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Beardsley & Haft Co., Columbus, O. "Slip-In."

Bemco—See B. E. Mfg. Co.

Boko—See Bailey-Drake Co.

Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass.

Co-Zee—See Omaha Auto Top Co.

Defiance Welding Co.—See Bailey-Drake Co.

Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Esco—See Economy Seat Co.

Fitwell—See Bailey-Fitwell Co.

Fitwell—See Niagara Fabric Mfg. Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Goodyear Rubber Co., 787 Broadway, New York, N. Y.

Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitwell."

Omaha Auto Top Co., Omaha, Nebr. "Co-zee." (See page 303.)

Powers Mfg. Co., Waterloo, Ia. (See page 530.)

Slip-In—See Beardsley & Haft Co.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Sure-Fit—See Hodes-Zink Mfg. Co.

Tatoo—See Thomas Auto Top Co.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatoo."

Ustus Products Co., 4042 W. Jefferson St., Detroit, Mich.

ARBOR PRESSES—See Presses, Arbor**ARBORS, EXPANDING—See Mandrels, Expanding****ARCH BARS—See Supports, Hood****ARCH PUNCHES—See Punches, Arch and Washer****ARMATURE WINDINGS—See Windings, Starter and Ignition****ARM RESTS FOR FORDS—See Rests, Arm****ARRESTERS, Tractor Spark**

Yuba Mfg. Co., Marysville, Cal.

ARTIFICIAL LEATHER—See Leather, Artificial**ARTILLERY WHEELS—See Wheels, Wood****ASBESTOS BRAKE LINING CUTTERS—See Cutters, Brake Lining****ASBESTOS GASKETS—See Packing, Asbestos****ASBESTOS PACKING—See Packing, Asbestos****ASBESTOS, Sheet**

(For Asbestos Packing—See Packing, Asbestos)

Allbenton Corp., Belfield Ave. & Fisher's Lane, Philadelphia, Pa. (See page 533.)

Ambesco—See American Asbestos Co.

Ambler—See Keasbey & Mattison Co.

American Asbestos Co., Norristown, Pa. "Ambesco." (See page 531.)

Autobestos—See Keasbey & Mattison Co.

Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."

J-M—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M."

Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Ambler." (See page 77.)

Norristown Magnesia & Asbestos Co., Norristown, Pa.

Reliance—See Dugas-Hundley Corp.

Watson Co., H. F., Erie, Pa.

ASH RECEIVERS—See Receptacles, Ash**ASH TRAYS—See Receptacles, Ash****ASSEMBLIES, WIRING, FOR FORDS—See Sets, Wiring****ASSEMBLING CLAMPS FOR FORDS—See Clamps, Transmission Band Assembling****ASSEMBLY PLATES FOR FORDS—See Plates, Differential Assembly****ASSOCIATIONS AND SOCIETIES**

(Comprising only Associations and Societies advertising in this publication)

American Malleable Castings Association, 1900 Euclid Bldg., Cleveland, O. (See page 79.)

Automotive Wood Wheel Manufacturers' Association, 105 W. Monroe St., Chicago, Ill. (See page 236.)

ATTACHMENTS, DUMMY FRAME, FOR FORDS—See Extensions, Dummy Frame**ATTACHMENTS, KEROSENE, FOR FORDS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake and Exhaust**

Everything is listed under the NOUN or principal word

ATTACHMENTS, Lathe Crankshaft Turning

Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo.

ATTACHMENTS, Lathe Cylinder Grinding and Reboring

Acme—See Continental Grinder Co.

Barnes Drill Co., 814-30 Chestnut St., Rockford, Ill.

Britton, Arthur T., 590 S. First St., San Jose, Cal. "W & B."

Continental Grinder Co., 2848 Fremont Ave., S., Minneapolis, Minn. "Acme."

Fox—See Sunderland Machine Shops.

Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo.

Sunderland Machine Shops, Omaha, Neb. "Fox." (See page 321.)

W & B—See Britton, Arthur T.

Wood & Safford Machine Works, 13th St., Great Falls, Mont.

ATTACHMENTS, Lathe Milling

Barnes Drill Co., 814-30 Chestnut St., Rockford, Ill.

Bicknell Mfg. & Supply Co., 22 N. Academy St., Janesville, Wis.

Davis—See Hinckley Machine Works.

Hinckley Machine Works, E. Lincoln Ave., Hinckley, Ill. "Davis."

Paschall Tool Co., Long Beach Bank Bldg., Long Beach, Cal.

Stark Tool Co., 218 Moody St., Waltham, Mass.

ATTACHMENTS, Magneto Mounting

Magneto Attachment Co., 3608 Park Ave., New York, N. Y. "Matco."

(See page 81.)

Matco—See Magneto Attachment Co.

ATTACHMENTS, Magneto Mounting, for Fords

(Bracket and gear housing for attaching to Ford Motor to permit of the installation of any standard make of magneto)

American Bosch Magneto Corp., (Brightwood), Springfield, Mass.

Magneto Attachment Co., 3608 Park Ave., New York, N. Y. "Matco."

(See page 81.)

Matco—See Magneto Attachment Co.

ATTACHMENTS, Power Transmitting

(Attachment to permit of the use of the car motor for general power purposes)

Auto Utilizer Co., 606-12 S. Pine St., Burlington, Wis.

Elmberg Co., E. F., Beaver Valley Bank Bldg., Parkersburg, Ia. "Elmco."

Elmco—See Elmberg Co.

Lay Porta Power—See Young Industries.

Young Industries, L. A., 9200 Russell St., Detroit, Mich. "Lay Porta Power."

ATTACHMENTS, Power Transmitting, for Fords

(Attachment to permit of the use of the car motor for general power purposes)

Ashland Products Co., 50 E. Ninth St., Ashland, O. (See page 487.)

Auto Utilizer Co., 606-12 S. Pine St., Burlington, Wis.

BB—See Bayne Mfg. Co.

Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 149.)

Fremont Foundry & Implement Works, 1408-14 W. Fifth, St., Oklahoma City, Okla.

Hickey, D. S., 40 Miley Rd., Boston, Mass.

Ira Manufacturers, Glen Ellyn, Ill.

McCargar Mfg. Co., L. B., 420 Delaware Ave., Kansas City, Mo.

Shaw, Welsh & Co., Galesburg, Ill.

Simplicity Mfg. Co., 1981 E. 97th St., Cleveland, O.

Star—See Winters, E. B.

Walker Battery Service, 233 Scott St., San Francisco, Cal.

Wehr Co., 533 30th St., Milwaukee, Wis. (See page 505.)

Winters, E. B., Coffeyville, Kans. "Star."

ATTACHMENTS, STEERING GEAR—See Checks, Steering Gear

ATTACHMENTS, Tilting Wheel for Fords

Warner Electric Co., 2507 S. Walnut St., Muncie, Ind. "Wheeltilts."

Wheeltilts—See Warner Electric Co.

ATTACHMENTS, TIMER ELEVATING, FOR FORDS—See Brackets, Timer Elevating

ATTACHMENTS, TRACTOR, FOR FORDS—See Converters, Chassis

ATTACHMENTS, TRUCK—See Converters, Chassis

AUTOGENOUS WELDING—See Welding, Autogenous

AUTOGENOUS WELDING MACHINES—See Machines, Autogenous Welding

AUTOGRAPHIC REGISTERS—See Registers, Autographic and Manifold

AUTOMATIC BEARING BOLTS—See Bolts, Automatic Bearing

AUTOMATIC CRANK RELEASERS FOR FORDS—See Cranks, Safety Starting

AUTOMATIC DISENGAGING TRACTOR HITCHES—See Hitches, Automatic Disengaging Tractor

AUTOMATIC DUMPING BODIES, FOR FORDS—See Bodies, Automatic Dumping

AUTOMATIC ENGINE STOPS—See Stops, Automatic Engine

AUTOMATIC GEAR SHIFTERS—See Shifters, Automatic Gear

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MAGNETO ATTACHMENTS

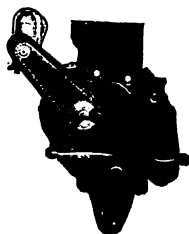


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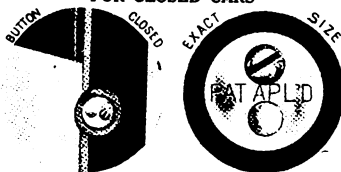
Write for prices before ordering elsewhere.

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Buttons	Upholstery
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Cloth	Rubber
Drumings	Top
Fasteners	Curtain
Hair	Upholstery
Headies	Car Door
Hinges	Door
Irons	Body and Top
Irons	Slat
Lights	Curtain
Locks	Car Door
Regulators	Window
Revolvers	Running Board
Revolvers	Body
Revolvers	Windshield
Openers	Curtain
Rollers	Curtain
Snap Fasteners	Curtain
Spring	Seat
Seals	Bow
Straps	Leather
Tanks	Upholstery
Thread	Top and Upholstery
Windows	Glass and Curtain

CORNELIUS TEN EICK
INCORPORATED

Automobile Body Material
253 West 47th Street, New York City

"Button" Window Anti-Rattlers FOR CLOSED CARS



A rubber button so made that, when fastened to the frame, it turns in and down against the glass, forming a wedge, as the screw it works on is off center.

Will never work loose as they are so made that the rubber acts as a cushion or spring, that can be set at any tension desired by adjusting screw, holding them firmly in place.

Impossible to break glass, even though the window should be raised or lowered with the buttons closed or set, as they release themselves automatically with no injury to the glass, a feature no other anti-rattler has.

Are neat in appearance, and do not project beyond the frame to catch or tear clothing.

Retail Price, 25c each

LIBERAL DISCOUNT TO DEALERS

Campbell Manufacturing Co.

2335 SOUTHWEST BOULEVARD
KANSAS CITY MISSOURI



U. S. AXLES

A Front Axle Very free steering and steady at high speeds. Made for right and left hand control. Any width spring centers. Loading 1500 lbs.

U. S. AXLE CO.

Pottstown, Penna.

Please mention The Automobile Trade Directory

AUTOMATIC HEADLIGHT BRACKETS—See Brackets, Automatic Headlight

AUTOMATIC HOSE REELS—See Reels, Automatic Hose

AUTOMATIC PISTON MACHINES—See Machines, Automatic Piston and Ring

AUTOMATIC QUICK STOP TRACTOR HITCHES—See Hitches, Automatic Quick Stop Tractor

AUTOMATIC RADIATOR COVERS—See Shutters, Automatic Radiator

AUTOMATIC RADIATOR SHUTTERS—See Shutters, Automatic Radiator

AUTOMATIC REELS—See Reels, Automatic Extension Lamp

AUTOMATIC RELEASE CLEAVES—See Hitches, Automatic Tractor Release

AUTOMATIC RING MACHINES—See Machines, Automatic Piston and Ring

AUTOMATIC SCREW MACHINES—See Machines, Screw

AUTOMATIC SPARK RETARDERS FOR FORDS—See Retarders, Automatic Spark

AUTOMATIC TRACTOR HITCHES—See Hitches, Automatic Disengaging Tractor

AUTOMOBILES, GASOLINE, STEAM AND ELECTRIC—See Section I

AUXILIARY AIR VALVES—See Mixers, Fuel

AUXILIARY SEATS—See Seats, Auxiliary

AUXILIARY SPRINGS—See Shock Absorbers, Spring

AUXILIARY TRACTOR CONTROLS—See Controls, Auxiliary Tractor

AUXILIARY TRANSMISSION GEARS FOR FORDS—See Gears, Auxiliary Transmission

AUXILIARY WIND SHIELDS—See Shields, Auxiliary Wind.

AXES, Motorists'

Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Bur-Nor—See Burgess-Norton Mfg. Co.

Burgess-Norton Mfg. Co., Dept. D., 532-44 Peyton St., Geneva, Ill. "Bur-Nor." (See page 627.)

AXLE BEARING SLEEVE PULLERS FOR FORDS—See Pullers, Axle Bearing Sleeve

AXLE BENDERS FOR FORDS—See Bars, Axle Straightening

AXLE BUSHINGS FOR FORDS—See Bushings, Bronze

AXLE END MILLS—See Mills, Steering Knuckle Bushing, for Fords

AXLE ENDS—See Forgings, Drop

AXLE GREASE RETAINERS FOR FORDS—See Retainers, Rear Axle Grease

AXLE HOUSING PULLERS FOR FORDS—See Pullers, Axle Housing

AXLE SHAFTS—See Shafts, Rear Axle

AXLE SPINDLES FOR FORDS—See Spindles, Emergency Rear Axle

AXLE STRAIGHTENING BARS FOR FORDS—See Bars, Axle Straightening

AXLE TAPER SHIMS FOR FORDS, REAR—See Shims, Rear Axle, Taper

AXLE TRUSS RODS FOR FORDS—See Rods, Rear Axle Truss

AXLES, EMERGENCY REAR FOR FORDS—See Spindles, Emergency Rear Axle for Fords

AXLES, Front

(Finished or Machine Axles; for Axle Forgings—See Forgings, Drop)

Adams Axle Co., Findlay, O.
(See page 85.)

Anchor—See Sheldon Axle & Spring Co.

Columbia Axle Co., Cleveland, O.
(See page 83.)

Continental Axle Co., Edgerton, Wis.

D A C—See Dunkirk Axle Corp.

Dunkirk Axle Corp., Dunkirk, N. Y. "D A C."

Eaton—See Standard Parts Co.

Flint Motor Axle Co., Flint, Mich.
(See page 345.)

Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.

Higgins Spring & Axle Co., Racine, Wis.
"Quality."

Ladish Drop Forge Co., Cudahy, Wis.
(See page 385.)

Lewis Spring & Axle Co., 42 Heidler St., Chelsea, Mich.

Peru Auto Parts Mfg. Co., Peru, Ind.

Quality—See Higgins Spring & Axle Co.

Russel Motor Axle Co., North Detroit, Mich.

Salisbury Axle Co., Jamestown, N. Y.
(See page 968.)

Sheldon Axle & Spring Co., Wilkes-Barre, Pa. "Anchor."

Shuler Axle Mfg. Co., Jones & N Sts., Louisville, Ky.

Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.

Stan-Par—See Standard Parts Co.

Standard Parts Co., Cleveland, O. "Stan-Par," "Eaton."
(See pages 85, 119, 701 and 798.)

Timken-Detroit Axle Co., 100-320 Clarke Ave., Detroit, Mich.

Torbensen Axle Co., E. 152d St., Cleveland, O.

Everything is listed under the NOUN or principal word



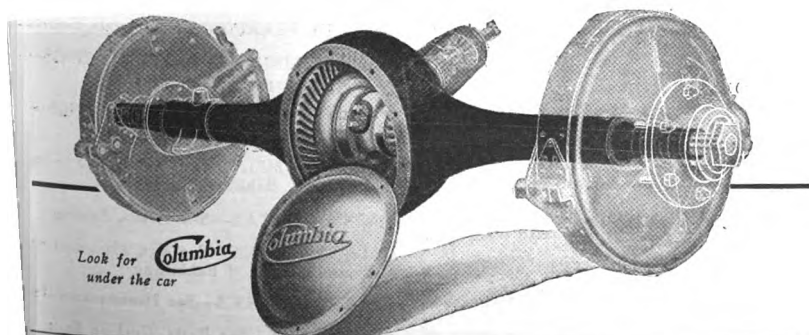
The rear axle is the most important part of a motor car, next to the engine.

IT HAS to resist terrific antagonistic strains. It has to carry the weight of the car and transmit the power to the rear wheels.

Columbia One-piece-housing Rear Axles are built by axle specialists who know what an axle has to do. The famous Columbia One-piece-housing is *pressed* from a single piece of steel and joined by *one* weld—this adds fifty per cent extra torsional strength. It is built with extra-large ring-gears, driving-shafts and brake drums.

If your car is equipped with Columbia Axles, front and rear, you may be confident that its builder has provided extra strength, extra safety and extra efficiency.

COLUMBIA AXLE COMPANY, CLEVELAND, OHIO, U. S. A.



Please mention The Automobile Trade Directory

AXLES, Front (Continued)

U. S. Axle Co., Pottstown, Pa.
(See page 81.)
Ve—See Vulcan Engineering Co.
Vulcan Engineering Co., Wildwood Ave.,
Jackson, Mich. "Ve."
Vulcan Motor Axle Corp., 7881 Conant Rd.,
Detroit, Mich.
Wisconsin Gear & Axle Co., State St. & Haw-
ley Rd., Wauwatosa, Wis.

U. S. Axle Co., Pottstown, Pa.
(See page 81.)
Vulcan Motor Axle Corp., 7881 Conant Rd.,
Detroit, Mich.
Walker Axle Co., 531-45 W. Pershing Rd., Chi-
cago, Ill.
Wisconsin Gear & Axle Co., State St. & Haw-
ley Rd., Wauwatosa, Wis.
Wisconsin Parts Co., Oshkosh, Wis.

AXLES, REAR, FOR FORDS—See Axles,
Worm Drive, Rear

AXLES, Rear

(Complete Rear Axle Units; for Axle Parts—See
Specialty Article)

Adams Axle Co., Findlay, O. "Simplex."
(See page 85.)
American Machine Co., Newark, Del.
Anchor—See Sheldon Axle & Spring Co.
Atlas Axle Co., Lowell, Ind.
Bridgeport Engineering Co., Seymour & Strat-
ford Sts., Bridgeport, Conn.
Central Axle Co., Holbrook & G. T. R. R.,
Detroit, Mich.
Central Service Corp., 1007 Merchants
Bank Bldg., Indianapolis, Ind. (Sales
Representatives.) (See page 945.)
Clark Equipment Co., Buchanan, Mich.
Columbia Axle Co., Cleveland, O.
(See page 83.)
Continental Axle Co., Edgerton, Wis.
Cross Gear & Engine Co., 3260 Bellevue Ave.,
Detroit, Mich.
D A C—See Dunkirk Axle Corp.
Dunkirk Axle Corp., Dunkirk, N. Y. "D A C."
Eaton—See Standard Parts Co.
Edwards Valve & Mfg. Co., E. Chicago, Ind.
Flint Motor Axle Co., Flint, Mich.
(See page 345.)
Hindley Gear Co., 1105 Frankford Ave., Phila-
delphia, Pa.
Iron Mountain Co., 927 E. 95th St., Chicago,
Ill.
Keystone-Hindley Gear Co., 30th St. & Indi-
ana Ave., Philadelphia, Pa.
L. M. Axle Co., 231 Colonial Arcade, Cleve-
land, O.
Lewis Spring & Axle Co., 42 Hollier St., Chel-
sea, Mich.
Medway Sales Corp., Baker Bldg., Racine,
Wis.
National Axle Co., Benton Harbor, Mich.
Parker Axles, Inc., 1819 Broadway, New York,
N. Y.
Peru Auto Parts Mfg. Co., Peru, Ind.
Russell Motor Axle Co., North Detroit, Mich.
Salisbury Axle Co., Jamestown, N. Y.
(See page 968.)
Sheldon Axle & Spring Co., Wilkes-Barre, Pa.
"Anchor."
Simplex—See Adams Axle Co.
Spacke Machine & Tool Co., 600 Madison Ave.,
Indianapolis, Ind.
Stan-Par—See Standard Parts Co.
Standard Parts Co., Cleveland, O. "Stan-
Par," "Eaton."
(See pages 85, 119, 701 and 798.)
Thompson, James & Co., 516 Fifth Ave., New
York, N. Y.
Thomson Press Co., John, 253 Broadway, New
York, N. Y.
Timken-Detroit Axle Co., 100-320 Clarke Ave.,
Detroit, Mich.
Torbensen Axle Co., E. 152d St., Cleveland, O.

AXLES, Special Trailer

(Finished or Machine Trolley Axles; for Trolley
Axle Forgings—See Forgings, Drop)

Adams Axle Co., Findlay, O.
(See page 85.)
American Axle Co., 12th St. & Montgomery
Ave., Philadelphia, Pa.
Auto Engineering Co., 1535 Temple Ave.,
Detroit, Mich. (See page 85.)
Concord Axle Co., Penacook, N. H.
Continental Axle Co., Edgerton, Wis.
Ekern-Turk Mfg. Co., Pipestone, Minn.
Flint Motor Axle Co., Flint, Mich. (See
(See page 345.)
Illinois Iron & Bolt Co., Carpentersville, Ill.
Liggett Spring & Axle Co., Monongahela, Pa.
Martin Rocking Fifth Wheel Co., Spring-
field, Mass. (See page 959.)
Shuler Axle Mfg. Co., Jones & N. Sts., Louis-
ville, Ky.

AXLES, Tractor

(See also Axles, Front; also Axles, Rear)

Adams Axle Co., Findlay, O.
(See page 85.)
Flint Motor Axle Co., Flint, Mich.
(See page 345.)
Milwaukee Forge & Machine Co., Mil-
waukee, Wis. (See pages 135 and 389.)
Shuler Axle Mfg. Co., Jones & N. Sts., Louis-
ville, Ky.
Torbensen Axle Co., E. 152d St., Cleveland, O.

AXLES, TRAILER—See Axles, Special
Trailer

AXLES, Worm Drive Rear, for Fords

McIntyre Motor Products Co., 5711 Went-
worth Ave., Chicago, Ill.

BABBITT BEARINGS—See Metals, Bearing

BABBITT-LINED BRONZE BEARINGS—
See Bearings and Bushings

BABBITT-LINED BRONZE BUSHINGS—
See Bearings and Bushings

BABBITT MELTING FURNACES—See
Furnaces, Babbitt Melting

BABBITT METAL—See Metals, Bearing

BABBITTING JIGS—See Jigs, Main Bearing
Connecting Rod Babbitting

BABY HAMMOCKS—See Hammocks, Baby

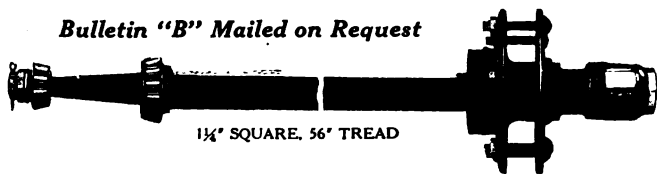
BACK RESTS—See Rests, Cushion Back

Everything is listed under the NOUN or principal word

COMPLETE TRAILER AXLES

To Fit Ford Type of Front Wheel

Bulletin "B" Mailed on Request



1 1/4" SQUARE, 56" TREAD

For light two-wheel pole trailers which are used extensively by campers, carpenters, plasterers, farmers, paper-hangers, plumbers, millwrights, painters, etc.

Production machine work solicited for screw machines, lathes, mills, drills and grinders.

SEND US YOUR BLUE PRINTS FOR ESTIMATES

THE AUTO ENGINEERING COMPANY

Phone Glendale 6910

1535 TEMPLE AVENUE

DETROIT, MICHIGAN, U. S. A.

ADAMS AXLES

Represent Advanc-
ed Thought In
Axle Construction

Quality

Service

THE ADAMS AXLE CO.

Findlay, Ohio

Detroit Office: 1401 Kresge Building

W. D. Rockwell, Mgr.

A

EATON

The supremacy of Eaton Axles for both passenger and commercial car service comes from these facts: They are built throughout of finest metals, in America's most modernly equipped axle plant, and by men who have spent their lives in axle making.

THE EATON AXLE COMPANY
Cleveland, Ohio
Division of The Standard Parts Company

AXLES

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BACKS, Metal Seat*(For Wood Seat Backs—See Bindings, Wood)*

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "S. A."
 Cornwall Mfg. Co., Cleveland, O.
 (See page 845.)
 Mullins Body Corp., 183 Franklin Ave., Salem, O.
 Sheet Steel Products Co., Bryan, O.
 1A—See American Automobile Accessories Co.

BAGS, Coat Rail*(Small Fabric or Leather Bags to be hung on Ribs or Coat Rails for carrying gloves, goggles or other articles)*

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)
 Bemco—See B. E. Mfg. Co.
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y.
 (See page 165.)
 Powers Mfg. Co., Waterloo, Ia.
 (See page 530.)

BAGS, GAS—See Bags, Rubber Gas**BAGS, GREASE—See Boots, Steering Knuckle****BAGS, INNER TUBE—See Cases, Tire****BAGS, Luggage, for Fords***(For attaching to back of front seats)*

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y.
 (See page 165.)

BAGS, MAILING—See Bags, Shipping**BAGS, ROBE RAIL—See Bags, Coat Rail****BAGS, Rubber Gas***(Small Rubber Bags to be attached to Acetylene Head Lights to equalize the flow of gas to the lamp and prevent flickering)*

Davol Rubber Co., Providence, R. I.
 Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
 Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.

BAGS, Shipping

Ames Bag Machine Co., 5606 Euclid Ave., Cleveland, O. "Amesacks."
 Amesacks—See Ames Bag Machine Co.
 Bemis Bro. Bag Co., 601-25 S. Fourth St., St. Louis, Mo. "Two-in-one."
 Bull Dog—See National Bag Co.
 Central Bag Mfg. Co., 2612-30 Iron St., Chicago, Ill.
 Chase Bag Co., 4-26 N. Main St., St. Louis, Mo.
 Cleveland-Akron Bag Co., Cleveland, O.
 (See page 91.)
 Crown Paper & Bag Co., 405-07 Liberty St., Jackson, Mich.

Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.

Goss Co., J. C., 36 Woodbridge St., E., Detroit, Mich.

Milwaukee Bag Co., 206-20 S. Water St., Milwaukee, Wis. "Red Top."

National Bag Co., 71 Washington St., Naperville, Ill. "Bull Dog."

National Mailing Device Co., Manhattan Bldg., Kansas City, Mo.

Red Top—See Milwaukee Bag Co.

Specialty Bag Co., 3007 Fulton St., Brooklyn, N. Y.

Troy Sun Shade Co., 710 Lincoln Ave., Troy, O.
 Two-in-one—See Bemis Bro. Bag Co.

BAGS, Steam Tire Curing

Allsteel Ridewell Tire & Rubber Co., Dayton, O. "Artyr." (See page 87.)

American Rubber & Tire Co., 100 Beech St., Akron, O.

Artyr—See Allsteel Ridewell Tire & Rubber Co.

I. X. L. Tire Builders Equipment Co., Peoria Life Bldg., Peoria, Ill.

K. A. R. Rubber Co., 110 W. Tenth St., West New York, N. J.

Perpetual Air Bag Co., 2103 S. Michigan Ave., Chicago, Ill. (See page 91.)

Steam Bag Corp., 1545-47 Broadway, Denver, Colo. "20th Century."

20th Century—See Steam Bag Corp.

BAGS, TUBE—See Covers, Spare Tire**BAGS or ROLLS, Tool***(For Tool Boxes—See Boxes, Tool)*

Accurate Cover Co., 373 Canal St., New York, N. Y.

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)

Auburn Leather Goods Co., 8 Miller St., Auburn, N. Y.

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco."

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Bemco—See B. E. Mfg. Co.

Bemis Bro. Bag Co., 601-25 S. Fourth St., St. Louis, Mo.

Campbell—See Perkins-Campbell Co.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Co-Zee—See Omaha Auto Top Co.

Dafco-Eustice Co., 4943 W. Jefferson Ave., Detroit, Mich. "Duk-Bak." "Deco." "Utatua."

Deco—See Dafco-Eustice Co.

Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Duk-Bak—See Dafco-Eustice Co.

Economy Stay Co., Jefferson City, Mo.

Edelstone Fabric Co., Wm. W., 51 Chardon St., Cambridge, Mass. "Wedco."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Excelsior Bag & Mfg. Co., Troy, N. Y.

Feaser Co., Frank S., 1103 Prospect St., Indianapolis, Ind. "Superior."

Fitswell—See Niagara Fabric Mfg. Co.

Goss Co., J. C., 36 Woodbridge St., E. Detroit, Mich.

Landers Bros. Co., Dept. A3, Toledo, O.
 (See page 263.)

Everything is listed under the NOUN or principal word

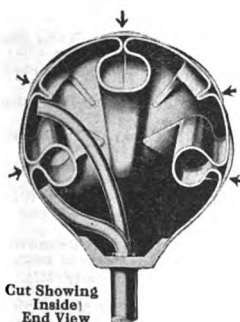
Huetter Expansible Metal Tire Building Core and Steam Curing Bag

TRADE



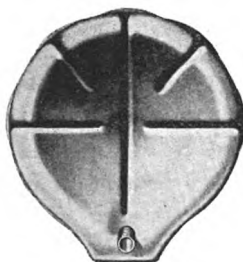
MARK

"MADE IN DAYTON"



*Made in Two
Types*

Full circle and
sectional types
all sizes from
3 in. to 8 in.



Cut Showing
Outside End View

COLLAPSIBLE

Full Circle Metal Curing Bags serve as Tire Building Cores; are removed only after curing in sections like collapsible iron cores.

INDESTRUCTIBLE

The Huetter principle of expansion permits expanding at several points where most needed. Expansion is over 15% and over 1000 cures are possible. All bags are made of special sheet steel.

PRICE LIST—Prices and complete information will be gladly submitted upon request.

ARTYR

THE ALLSTEEL RIDEWELL TIRE & RUBBER CO.
DAYTON, OHIO, U. S. A.

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BAGS or ROLLS, Tool (Continued)

Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y.
(See page 165.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)

Planet Co., 180 N. Elm St., Westfield, Mass.

Powers Mfg. Co., Waterloo, Ia.
(See page 530.)

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."

Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.

Superior—See Feaser Co.

Troy Sun Shade Co., 710 Lincoln Ave., Troy, O.

Utus—See Dafce-Eustice Co.

Wedco—See Edystone Fabric Co.

BAGS, Water Carrying

(For carrying a supply of water on long trips; for Buckets or Pails for filling Radiators—See Buckets, Collapsible)

Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo.

Desert—See Plummer Mfg. Co.

Egyptian—See Whitaker Mfg. Co.

Plummer Mfg. Co., W. A., San Francisco, Cal. "Desert."

Red Seal—See Schaefer Tent & Awning Co.
Schaefer Tent & Awning Co., 1421 Larimer St., Denver, Colo. "Red Seal."

Whitaker Mfg. Co., Chicago, Ill. "Egyptian." (See page 311.)

BALANCING MACHINES—See Machines, Balancing**BALANCING WAYS—See Ways, Balancing****BALL BEARINGS—See Bearings, Ball****BALL BEARINGS, REGROUND—See Bearings, Reground Ball****BALL CHECK VALVES—See Valves, Ball Check****BALL CONES—See Cups, Ball****BALL CUPS—See Cups, Ball****BALL JOINTS—See Joints, Ball****BALL RACES—See Cups, Ball****BALL RETAINERS—See Retainers, Ball****BALL SOCKETS FOR FORDS—See Anti-Rattlers****BALL THRUST BEARINGS FOR FORDS—See Bearings, Drive Gear Ball Thrust and Roller****BALLS, Composition Control Lever**

(Moulded Composition Balls or Knobs for Gear Shift Levers)

Alco—See American Insulator Corp.

American Insulator Corp., New Freedom, Pa. "Alco." (See page 187.)

Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 187.)

Garfield Mfg. Co., Garfield, N. J.

International Insulating Corp., ft. Mechanic St., Springfield, Mass.

Pouvaillsmith Corp., Smith St., Poughkeepsie, N. Y.

BALLS, Steel

(For use in Ball Bearings; for complete Bearings—See Bearings, Ball)

Abbott Ball Co. (Elmwood), Hartford, Conn.

Atlas—See SKF Industries, Inc.

Bemco Mfg. Co., 358 W. 50th St., New York, N. Y. (See page 91.)

Bryce Mfg. Co., Academy St., Forestville, Conn.

C & C Sales Corp., 1755 Broadway, New York, N. Y. (Importers.)
(See page 203.)

Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (Dealers.) (See page 102.)

Hoover Steel Ball Co., Ann Arbor, Mich. (See page 89.)

McIntyre Machine Works, 78 Grove St., Hartford, Conn.

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.

Metal Specialty Mfg. Co., E. Aurora St., Waterbury, Conn. "Wamsco."

Michigan Bearings Co., 5959 Woodward Ave., Detroit, Mich. (Dealers.)
(See page 119.)

SKF Industries, Inc., 165 Broadway, New York, N. Y. "Atlas." (See page 107.)

Wamsco—See Metal Specialty Mfg. Co.

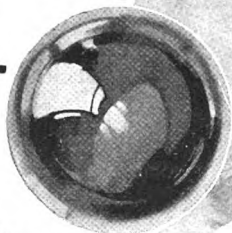
BAND ASSEMBLING CLAMPS FOR FORDS—See Clamps, Transmission Band Assembling**BAND BRAKES—See Brakes, Expanding and Contracting****BAND INSERTS, TRANSMISSION, for Fords—See Inserts, Transmission Band****BAND SAWS—See Saws, Band****BANDAGE WRAPPING MACHINES—See Machines, Tire Bandage Wrapping****BANDING, BRAKE—See Lining, Brake****BANDING CUTTERS—See Cutters, Brake Lining****BANDING TRANSMISSION FOR FORDS—See Lining, Brake****BANDS, Non-Skid Truck**

(Detachable Metal Bands or Rims with Lugs to apply to Truck Wheels to prevent skidding and to give traction; for other Anti-Skid Devices—See Chains, Tire; Boxes, Sand; also Treads, Detachable)

Foley Traction Rim Co., 827 Hennepin Ave., Minneapolis, Minn.

Everything is listed under the NOUN or principal word

HOOVER STEEL BALLS



NIMBLE bearings revolving on gleaming steel balls are a potent factor in the development of maximum draw-bar pull.

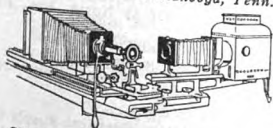
The better known tractor builders have found a real solution of their bearing problems of utilizing Hoover balls. Usage has demonstrated the power preserving alertness of their uniform and absolute sphericity.

And also shown the value of their highly polished and unblemished surface in overcoming actual and potential friction.

HOOVER STEEL BALL CO.
ANN ARBOR, MICH.

Branch Offices:
Chicago Cleveland New York San Francisco

Southern Representatives:
Sanford Brothers, Chattanooga, Tenn.



Microscopic surface examination is the first step of the final super-inspection. This operation unerringly reveals surface defects invisible to the naked eye and subsequent etching by acid brings out hidden defects if any are present.

(7)



Please mention The Automobile Trade Directory

BANDS, TIRE REPAIR—See Sleeves, Tire Repair**BANDS, Transmission, for Fords**

(Steel band with lugs attached for low speed and reverse gears and for transmission brake)

Demountable Non-Chatter Band Co.—See Russell Mfg. Co.

Denonco—See Russell Mfg. Co.

Duplex Transmission Co., 48 Clay St., San Francisco, Cal.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See page 167.)

Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.

Rusco—See Russell Mfg. Co.

Russell Mfg. Co., Middletown, Conn. (Also Sole Distributors for Demountable Non-Chatter Band Co., New York, N. Y. "Denonco.") (See page 530.)

BANKERS—See Brokers and Bankers**BAR CUTTERS—See Cutters, Rod and Bar****BAR SOLDER—See Solder, Bar and Wire****BAR STEEL—See Steel****BAROMETERS, Altitude Indicating**

(For Dash Attachment)

Bernard, F. J., 64 Murray St., New York, N. Y.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y. "Tyco."

Tyco—See Taylor Instrument Companies.

BARREL EMPTYING PUMPS—See Pumps, Barrel Emptying**BARREL HOLDERS—See Holders, Oil Barrel and Can****BARRELS, SHOP—See Boxes, Sheet Metal Tote****BARS, ARCH—See Supports, Hood****BARS, Axle Straightening, for Fords**

American—See Service Station Equipment Co.

Brochu, A. D., 5 Pavillion St., Hartford, Conn.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."

BARS, Boring

(See also Tools, Portable Cylinder Boring)

Alert Tool Co., 237 N. Sixth St., Philadelphia, Pa.

Carr—See Thompson & Son Co.

Clough, R. M., Tolland, Conn.

Davis Boring Tool & Mfg. Co., 3700 Forest Park Blvd., St. Louis, Mo.

Detroit Garage Equipment Co., 38 Hendrie St., Detroit, Mich.

Expansion Boring Tool Co., 1444 Rivard St., Detroit, Mich.

Gatchell—See Mill City Co.

Gisholt Machine Co., 1315 E. Washington St., Madison, Wis.

Kelly Reamer Co., 3705 W. 73d St., Cleveland, O.

Krieger Tool & Mfg. Co., Wisconsin Rapids, Wis.

Madison Mfg Co., Spring & Elton Sts., Muskegon, Mich.

Marvin & Casler Co., 118 Roberts St., Canastota, N. Y.

Mill City Co., Minneapolis, Minn. "Gatchell."

O. K. Tool Holder Co., Shelton, Conn.

Ready Tool Co., 324 Iranistan Ave., Bridgeport, Conn. "Red-E."

Red-E—See Ready Tool Co.

Rigid Tool Holder Co., 2223 Volta Pl., Washington, D. C.

Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Carr."

Woods Engineering Co., 108 E. Patterson St., Alliance, O.

BARS, CORED—See Metals, Bearing**BASKETS, TOURING—See Hampers, Touring****BATTERIES, Dry**

American Carbon & Battery Co., East St. Louis, Ill.

American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."

Big Bear—See Western Dry Battery Co.

Blue Seal—See Manhattan Electrical Supply Co.

Bright Star Battery Co., 310 Hudson St., New York, N. Y.

Bull Dog—See Western Dry Battery Co.

Burgess Battery Co., Harris Trust Bldg., Chicago, Ill.

Burn-Boston Battery & Mfg. Works, Little Bldg., Boston, Mass.

Columbia—See National Carbon Co.

Eveready—See American Ever Ready Works.

French Battery & Carbon Co., Madison, Wis. "Ray-O-Sparks."

Hi-Pe Waterproof Battery Corp., South Norwalk, Conn.

Hi-Up—See Manhattan Electrical Supply Co.

Hipwell Mfg. Co., 325-35 North Ave., Pittsburgh, Pa.

Hot Shot—See National Carbon Co.

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y. "Mesco," "Blue Seal," "Red Seal," "Hi-Up."

Maxlife—See Stolp Co.

Mesco—See Manhattan Electrical Supply Co.

National Carbon Co., Cleveland, O. "Columbia," "Hot Shot." (See page 163.)

Ray-O-Sparks—See French Battery & Carbon Co.

Red Seal—See Manhattan Electrical Supply Co.

Red Shield—See Wesco Supply Co.

Stolp Co., 2210 S. Park Ave., Chicago, Ill. "Maxlife."

Washington Automobile Supply Co., Washington, Ill.

Wesco Supply Co., Seventh St. & Clark Ave., St. Louis, Mo. "Red Shield."

Western Dry Battery Co., 2501 15th Ave., W., Seattle, Wash. "Bull Dog," "Big Bear."

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- Accessory Supply Co., Reliance Bldg., Kansas City, Mo. "Asco."
- Acme Storage Battery Corp., Poughkeepsie, N. Y. (See page 94.)
- Adco Dry Battery Co., 1714 Michigan Ave., Chicago, Ill.
- Advance Battery Mfg. Co., 122-24 S. Sixth St., Louisville, Ky.
- Ajax—See United States Battery Co.
- Alco Delux—See Cincinnati Storage Battery Co.
- Am-Plus Storage Battery Co., 741-45 W. Van Buren St., Chicago, Ill.
- American Accumulator Co., 148-50 E. Third St., Owatonna, Minn. "Minnesota."
- American Battery Co., 2000 McGee St., Kansas City, Mo. "Strongheart."
- American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."
- American Storage Battery Co., Cambridge, Mass. "Harvard."
- Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 94.)
- Asco—See Accessory Supply Co.
- Ashbrook Electric Co., 4111 Ravenswood Ave., Chicago, Ill.
- Atlas Electric Storage Battery Co., Grove St., Greenville, Mich.
- Aurora—See Marvin Battery & Engineering Corp.
- Auto Ignition & Battery Co., Tenth Ave. & Becher St., Milwaukee, Wis.
- Barco Battery Co., 641 Monroe St., Detroit, Mich. "Bear Cat," "Blitwell."
- Battery Service Corp., Philadelphia, Pa. "Kelco."
- Bear Cat—See Barco Battery Co.
- Big 4 Battery Co., Calumet & Gostlin Sts., Hammond, Ind. (See page 97.)
- Blitwell—See Barco Battery Co.
- Buffalo Battery Co., 6-10 Northampton St., Buffalo, N. Y.
- C. I. S. C. O.—See Chicago Ignition Supply Co.
- C & D—See Carlile & Doughty.
- Calumet Storage Battery Co., 10113 Indianapolis Ave., Chicago, Ill.
- Camel—See Campbell Electric Co.
- Campbell Electric Co., 1531 Wyandotte St., Kansas City, Mo. "Camel."
- Carlile & Doughty, 2534 N. Broad St., Philadelphia, Pa. "C & D."
- Chain Battery System, 2332 S. Michigan Ave., Chicago, Ill.
- Chicago Ignition Supply Co., 1440 S. Michigan Ave., Chicago, Ill. "C. I. S. C. O."
- Cincinnati Storage Battery Co., Moorma Ave., Cincinnati, O. "Alco Delux."
- Cole Storage Battery Co., 2433 Indiana Ave., Chicago, Ill. (See page 95.)
- Columbia—See National Carbon Co.
- Columbia Storage Battery Co., 313 Ohio St., Terre Haute, Ind.
- Combat—See Commercial Battery Co.
- Commercial Battery Co., 759-61 Boston Ave., Chicago, Ill. "Combat"
- Continental Storage Battery & Equipment Co., 400 W. 23rd St., New York, N. Y.
- Cook Railway Signal Co., 1798 S. Broadway, Denver, Colo. "Re Vivo."
- Cooper Storage Battery Mfg. Co., Dunbar & B. & O. R. R., Cincinnati, O.
- Cowie Electric Co., E. S., Kansas City, Mo. (See page 481.)
- Crown Battery Co., 53 Montcalm St., W., Detroit, Mich.
- D-G Storage Battery Co., 2029-37 Indiana Ave., Chicago, Ill. (See page 98.)
- Davis-Lynn Storage Battery Mfg. Co., 163 Commercial St., Lynn, Mass.
- Detroit—See Disco Electric Mfg. Co.
- Disco Electric Mfg. Co., 2100 Howard St., Detroit, Mich. "Detroit."
- Dixie Storage Battery Co., 1412-18 W. Lafayette Ave., Baltimore, Md.
- Dragon—See Englert Mfg. Co.
- Dreadnaught—See Gould Storage Battery Co.
- Duplex Storage Battery Co., Beaver Dam, Wis. (See page 99.)
- Edison Storage Battery Co., 131 Lakeside Ave. (W. Orange), Orange, N. J.
- Electric Storage Battery Co., Allegheny Ave. & 19th St., Philadelphia, Pa. "Exide."
- Electrolyte Storage Battery Co., 1309 Race St., Philadelphia, Pa.
- Elston—See Marlon-Elston Battery Co.
- Englert Mfg. Co., Pittsburgh, Pa. "Dragon."
- Eureka Battery Corp., 2212-16 Sedgwick St., Chicago, Ill.
- Eureka—See Storage Battery & Appliance Corp.
- Eveready—See American Ever Ready Works.
- Exide—See Electric Storage Battery Co.
- Famous Battery Co., N. W. cor. Randolph St. & Ogden Ave., Chicago, Ill.
- Federal Battery Mfg. Corp., 620-24 F St., N. W., Washington, D. C.
- Fort Wayne Battery Mfg. Co., 230-300 E. Fourth St., Fort Wayne, Ind.
- Fritchle Electric Co., 1544 Clarkson St., Denver, Colo.
- General Lead Batteries Co., 4 Lister Ave., Newark, N. J. "Titan."
- General Storage Battery Co., 2005 Locust St., St. Louis, Mo.
- Gill Storage Battery Co., 937 Third St., San Bernardino, Cal.
- Gillard Storage Battery Co., 733 Farwell Bldg., Detroit, Mich. (See page 94.)
- Gillette Storage Battery Co., 2115-19 Wabash Ave., Chicago, Ill.
- Globe Electric Co., 10 Keefe Ave., Milwaukee, Wis.
- Gold Seal Storage Battery Co., James & McDonald Sts., Green Bay, Wis.
- Gould Storage Battery Co., 30 E. 42d St., New York, N. Y. "Dreadnaught."
- Grant Storage Battery Co., 104 N. Second St., Minneapolis, Minn.
- Grosche, F. W., 219 W. Mulberry St., Baltimore, Md. "Fatapso."
- Guaranteed Battery Co., 2017-25 Lucas Ave., St. Louis, Mo. "Lion."
- Hartford Battery Mfg. Co., Milldale, Conn.
- Harvard—See American Storage Battery Co.
- Heissler Storage Battery Co., 2500-10 Cottage Grove Ave., Chicago, Ill.
- Hins Storage Battery Co., 1312-14 Third Ave., S., Minneapolis, Minn.
- Hobbs Storage Battery Co., 1231-35 S. Olive St., Los Angeles, Cal.
- Hudson-Fulton—See Storage Battery Supply Co.
- J-E—See Jelly-Electrolyte Battery Co.
- Jelly-Electrolyte Battery Co., 147 S. 30th St., Philadelphia, Pa. "J-E." (See page 97.)
- Jupiter—See Perfection Storage Battery Co.
- Keeler Battery Co., 134 Ontario St., Toledo, O.
- Kelco—See Battery Service Corp.
- Keystone Storage Battery Co., 2036 Sansom St., Philadelphia, Pa.
- Kwick Repairable Battery Corp., 1475 Michigan Ave., Chicago, Ill.
- LBA—See Willard Storage Battery Co.
- LaDuska-Flint Battery Corp., 216-24 State St., Binghamton, N. Y. "La-Flint."
- La-Flint—See LaDuska-Flint Battery Co.
- Lion—See Guaranteed Battery Co.
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Lyons & Co., A. H., Stephen Girard Bldg., Philadelphia, Pa.
M. & M.—See Molter Service Co.
 McCauley Storage Battery Co., 1060 St. Clair Ave., E., Cleveland, O.
 McLean Storage Battery Co., 721 Frankfort St., Cleveland, O.
 Mack Storage Battery Co., 419 E. Jefferson Ave., Detroit, Mich.
 Marion-Elston Battery Co., Marion, Ind. "Elston."
 Marko & Co., Paul M., 1402-12 Atlantic Ave., Brooklyn, N. Y.
 Marvel Storage Battery Co., 7030 Hollywood Blvd., Los Angeles, Cal.
 Marvin Battery & Engineering Corp., 67 S. La Salle St., Aurora, Ill. "Aurora."
 Masco—See Milwaukee Auto Specialty Co.
 Master—See Standard Storage Battery Co.
 Milwaukee Auto Specialty Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium," "Masco."
 Minnesota—See American Accumulator Co.
 Motor Service Co., 306 S. Wabash Ave., Chicago, Ill. "M. & M."
 Muller, Albert, Hoffman Blvd. & Hillside Ave., Jamaica, N. Y. "Porox."
 Multiple Storage Battery Co., Van Wyck Ave. & L. I. R. R., Jamaica, N. Y.
 National Carbon Co., Cleveland, O. "Columbia." (See page 163.)
 National Lead Battery Co., 1704 Roblyn Ave., St. Paul, Minn.
 O. K. Giant Battery Corp., Gary, Ind. (See page 94.)
 Patapco—See Grosche, F. W.
 Perfection Storage Battery Co., 500 E. 40th St., Chicago, Ill. "Jupiter."
 Permalife Storage Battery Co., Merchants Bank Bldg., Indianapolis, Ind.
 Philadelphia Storage Battery Co., Ontario & O Sts., Philadelphia, Pa. (See page 95.)
 Pioneer Storage Battery Co., 1415 Race St., Philadelphia, Pa.
 Pleis Storage Battery, 1708 Spring Garden St., Philadelphia, Pa.
 Porox—See Muller, Albert.
 Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill.
 Prest-O-Lite Co., 30 E. 42d St., New York, N. Y.
 R. T. Sales Co., 226 N. Adams St., Green Bay, Wis.
 Radio Storage Battery Co., 1507 Franklin St., San Francisco, Cal.
 Radium—See Milwaukee Auto Specialty Co.
 Radium—See Rumsey Electric Co.
 Ray Battery Co., 35 N. Huron St., Ypsilanti, Mich. (See page 98.)
 Red Cap—See Wolke Lead Batteries Co.
 Reliable—See Storage Battery Supply Co.
 Reliance—See Storage Battery Supply Co.
 Rumsey Electric Co., 3033 North Grand Blvd., Detroit, Mich. "Radium."
 S. O. S.—See Victor Storage Battery Co.
 Schug Electric Mfg. Co., 959 E. Jefferson Ave., Detroit, Mich.
 Silvey Electric Co., 10-16 S. Canal St., Dayton, O.
 Standard Storage Battery Co., 146 Third St., Detroit, Mich. "Master."
 Star Storage Battery Co., 311 N. Jefferson St., Muncie, Ind.
 Sterling Storage Battery Co., Schenectady, N. Y. (See page 123.)
 Stewart Storage Battery Co., Marshfield, Wis.
 Storage Battery Supply Co., 239 E. 27th St., New York, N. Y. "Reliance," "Reliable," "Hudson-Fulton."

Storage Battery & Appliance Corp., 1830 Arch St., Philadelphia, Pa. "Eureka."
 Strongheart—See American Battery Co.
 Superior Storage Battery Co., 1715 McGee St., Kansas City, Mo.
 Titan—See General Lead Batteries Co.
 United Auto Electric Service Co., 197 Amsterdam Ave., New York, N. Y.
 U-S-L—See U S Light & Heat Corp.
 U S Light & Heat Corp., Niagara Falls, N. Y. "U-S-L." (See page 95.)
 United States Battery Co., Passaic, N. J. "Ajax."
 Universal Battery Co., 3409 S. La Salle St., Chicago, Ill. (See page 95.)
 Utility Battery Co., 123 W. Madison St., Chicago, Ill.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Victor Storage Battery Co., 1 Fourth Ave., Rock Island, Ill. "S. O. S." (See page 91.)
 Volkcar Storage Battery Co., 2437 Michigan Ave., Chicago, Ill.
 Volta Battery Co., 40 N. Sycamore St., Martinsville, Ind.
 Western Battery & Supply Co., 1230-40 Lincoln St., Denver, Colo.
 Westinghouse Union Battery Co., Swissvale, Pa.
 Willard Storage Battery Co., Cleveland, O. "Liba." (See page 97.)
 Witherbee Storage Battery Co., 643-45 W. 43rd St., New York, N. Y. (See page 98.)
 Wittmann Co., 205 S. 11th St., Lincoln, Neb.
 Wizard Battery Co., Toledo, O.
 Wolke Lead Batteries Co., 918 E. Main St., Louisville, Ky. "Red Cap." (See page 93.)
 Wright Storage Battery Co., 1384 Grand River Ave., Detroit, Mich.
 Zoar Battery Co., Zoar, O.

BATTERY ACID—See Electrolyte, Storage Battery

BATTERY BOOSTERS—See Rectifiers, Alternating Current

BATTERY BOX LOCKS—See Locks, Cabinet and Pad; also Catches and Fasteners, Spring

BATTERY BOXES—See Boxes, Battery

BATTERY CHARGERS—See Magnetos and Dynamos; also Dynamos, Battery Charging; also Rectifiers, Alternating Current; also Rheostats, Charging; also Systems, Electric Lighting

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BATTERY CHARGING CONNECTORS—See Connectors, Storage Battery Charging

BATTERY CHARGING PLUGS—See Plugs, Charging

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BATTERY CONNECTORS—See Connectors, Dry Battery; also Connectors, Storage Battery

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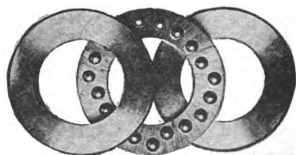
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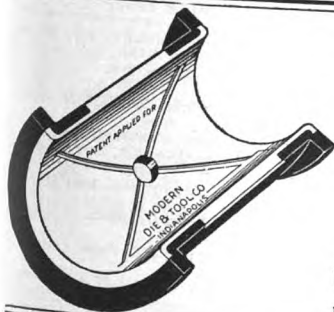
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BATTERY ELECTROLYTE—See Electrolyte, Storage Battery

BATTERY FILLERS—See Fillers, Automatic Storage Battery

BATTERY GAGES—See Gages, Battery

BATTERY HANDLES—See Handles, Storage Battery

BATTERY HOLDERS—See Holders, Battery; also Boxes, Battery

BATTERY IGNITION SYSTEMS—See Systems, Battery Ignition

BATTERY JARS—See Jars, Battery

BATTERY METERS—See Gages, Battery

BATTERY OPENING GENERATORS—See Steamers, Storage Battery

BATTERY PLATE PRESSES—See Presses, Storage Battery Plate

BATTERY POST CUTTERS—See Tools, Storage Battery Repair

BATTERY REPAIR PARTS—See Parts, Storage Battery Repair

BATTERY REPAIR TOOLS—See Tools, Storage Battery Repair

BATTERY SEPARATORS—See Separators, Storage Battery

BATTERY STEAMERS—See Steamers, Storage Battery

BATTERY STRAP BITS—See Drills and Bits, Battery Strap

BATTERY STRAP DRILLS—See Drills and Bits, Battery Strap

BATTERY TERMINAL PAINTS—See Paints, Storage Battery Terminal

BATTERY TESTERS—See Gages, Battery

BATTERY TESTING INSTRUMENTS—See Instruments, Storage Battery Testing

BATTERY THERMOSTATS—See Thermostats, Storage Battery

BATTERY TONGS—See Tools, Storage Battery Repair

BATTERY TURNTABLES—See Turntables, Storage Battery

BATTERY VISES—See Vises, Storage Battery

BEADING MACHINES—See Machines, Crimping and Beading

BEARING BOLTS, Automatic—See Bolts, Automatic Bearing

BEARING BRONZE—See Metals, Bearing

BEARING GRINDING COMPOUNDS—See Compounds, Bearing Grinding

BEARING JIGS—See Jigs, Main Bearing

BEARING METALS—See Metals, Bearing

BEARING PARTING TOOLS, CAM-SHAFT FOR FORDS—See Tools, Cam-Shaft Bearing Parting

BEARING PULLERS—See Pullers, Bearing

BEARING PULLING TOOLS—See Pullers, Bearing

BEARING REAMERS FOR FORDS—See Reamers, Main Bearing

BEARING SCRAPERS—See Scrapers, Bearing

BEARING SLEEVE PULLERS FOR FORDS—See Pullers, Axle Bearing Sleeve

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American Bearing & Die Casting Corp., Indianapolis, Ind.

Doehler Die-Casting Co., Brooklyn, N. Y. (See page 211.)

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for Victor Bushings.) (See page 118.)

Federal Bearing & Bushing Corp., Detroit, Mich. (See page 173.)

General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 581.)

Gilbert & Sons Brass Foundry Co., A., St. Louis, Mo. (See page 215.)

Hoyt Metal Co., St. Louis, Mo. (See page 102.)

Joppa Machine & Bronze Co., 1527 N. Fawn St., Philadelphia, Pa.

Lynux—See Aluminum Manufacturers, Inc.

Milwaukee Die Casting Co., 297 Fourth St., Milwaukee, Wis. (See page 173.)

Mueller Metals Co., Lapier Ave., Port Huron, Mich.

Muzzy-Lyon Co., Detroit, Mich. (See page 101.)

National Bronze Corp., 4537 Pope Ave., St. Louis, Mo.

Pacific Metal Bearing Co., 129-33 Myrtle St., San Francisco, Cal.

Parker White Metal & Machine Co., Erie, Pa. (See page 203.)

R. & V. Motor Co., East Moline, Ill.

Ring True—See General Aluminum & Brass Mfg. Co.

Ryerson & Son, Joseph T., 2558 W. 16th St., Chicago, Ill.

Specialty Products Co., 286 South St., Newark, N. J.

Stewart Mfg. Corp., 4500 Fullerton Ave., Chicago, Ill.

Victor Bearings Co., Indianapolis, Ind. (See page 99.)

BEARINGS, Ball

(For Bearing Parts—See Balls, Steel; also Cups, Ball; also Retainers, Ball)

Acorn Bearing Co., 26 Brook St., New Britain, Conn. (See page 98.)

Everything is listed under the NOUN or principal word

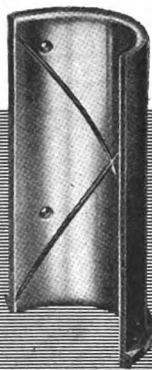
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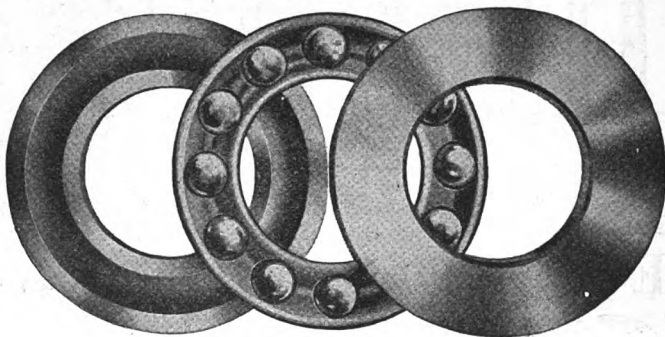
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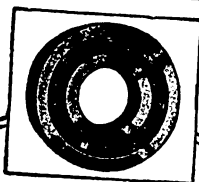
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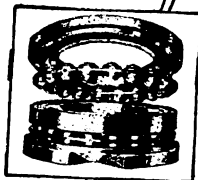
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Single-acting, self-aligning thrust bearing. 1100 Series.



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Double-acting, self-aligning thrust bearing with leveling washers. 1100U Series.

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BEARINGS, Ball (Continued)

Aetna Ball Bearing Mfg. Co., 213-31 Institute Pl., Chicago, Ill.
(See page 101.)

Allopar—See Alloy Parts Mfg. Co.
Alloy Parts Mfg. Co., Canton, O. "Allopar."
American Ball Co., 116 Clifford St., Providence, R. I.

B-N—See Burgess-Norton Mfg. Co.
Ball & Roller Bearing Co., 23 Maple Ave., Danbury, Conn. "Barbco."
Bantam Ball Bearing Co., Bantam, Conn.
Barbco—See Ball & Roller Bearing Co.
Bearings Co. of America, Lancaster, Pa.
(See page 102.)

Burgess-Norton Mfg. Co., Dept. D., 532-44 Peyton St., Geneva, Ill. "B-N."
(See page 627.)

C & C Sales Corp., 1755 Broadway, New York, N. Y. (Importers.)
(See page 203.)

Fafnir Bearing Co., New Britain, Conn.
Federal Bearings Co., 36 William St., Poughkeepsie, N. Y.

G-A Ball Bearing Co., 133 N. Albany Ave., Chicago, Ill.
Graham Roller Bearing Corp., Coudersport, Pa. (See page 110.)
Gurney Ball Bearing Co., Jamestown, N. Y. (See page 105.)

Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (Dealers.) (See page 102.)

Hess-Bright—See SKF Industries, Inc.
Imperial Bearing Co., Detroit, Mich.
(See page 101.)

Joy Ball Bearing Co., 407 S. Aberdeen St., Chicago, Ill.

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "S. R. B."

Mathews Mfg. Co., H. A., Seymour, Conn.
Michigan Bearings Co., 5959 Woodward Ave., Detroit, Mich. (Dealers.)
(See page 118.)

New Departure Mfg. Co., Bristol, Conn.
(See page 106.)

Nice Ball Bearing Co., 30th St. & Nicetown Lane, Philadelphia, Pa.

Norma Co. of America, Anable Ave., Long Island City, N. Y. (See page 68.)

Pruyn Co., 683 N. Broad St., Philadelphia, Pa.
SKF Industries, Inc., 165 Broadway, New York, N. Y. "Hess-Bright."
(See page 107.)

S. R. B.—See Marlin-Rockwell Corp.

S-W-S Co., Minneapolis, Minn.
(See page 431.)

Schatz Mfg. Co., 17 Fairview Ave., Poughkeepsie, N. Y.

Standard Machinery Co., Auburn, R. I.
(See page 115.)

Strom—See U. S. Ball Bearing Mfg. Co.

U. S. Ball Bearing Mfg. Co., 4561 Palmer St., Chicago, Ill. "Strom."
(See page 103.)

Universal Auto Parts Co., 268 Nartilla St., Portland, Ore. (Distributor.)
(See page 157.)

Western Bearings Co., 2831-35 S. State St., Chicago, Ill. (Jobbers.) (See page 90.)

BEARINGS, BRONZE—See Metals, Bearing**BEARINGS, Crank Shaft Thrust, for Fords**

Adjusto—See Moore, T. B.
Moore, T. B., 2812 Grand River Ave., Detroit, Mich. "Adjusto."

BEARINGS, DIE CAST—See Castings, Die**BEARINGS, DIE CAST, FOR FORDS—See Bushings, Bronze and Die Cast****BEARINGS, Drive Gear Ball and Roller Thrust, for Fords**

(Ball thrust bearings to be installed at left side of differential in place of thrust washers)

Allopar—See Alloy Parts Mfg. Co.
Alloy Parts Mfg. Co., Canton, O. "Allopar."
Anco—See Anderson Co.
Anderson Co., 233 S. St. Joseph St., South Bend, Ind. "Anco."
Bailey Co., Geo. D., 4505 Ravenswood Ave., Chicago, Ill.
Bersted Mfg. Co., 765 Mather St., Chicago, Ill.
Each, Ed., 2100 Michigan Ave., Chicago, Ill.
F. W. S.—See Stewart Mfg. Corp.
Fulton-Houston Co., 1148 S. Michigan Blvd., Chicago, Ill. (See page 415.)
Graham Roller Bearing Corp., Coudersport, Pa. (See page 110.)
Holmes, Geo. L., 1776 Broadway, New York, N. Y. (Eastern Distributor for "Graham" Bearings.) (See page 179.)
Pittsburgh Casting & Heater Co., Scott Pl., Pittsburgh, Pa.
Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (See page 537.)
Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill. "F. W. S."

BEARINGS, Drive Shaft Steady

Carter Carburetor Co., 2335-40 N. Spring Ave., St. Louis, Mo. "Whip-Not."
Whip-Not—See Carter Carburetor Co.

BEARINGS, Front Wheel, for Fords

(Special Ball and Roller Bearings for replacing Front Wheel Bearings)

A-S-P—See Allied Steel Products Co.
Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "A-S-P."
Allopar—See Alloy Parts Mfg. Co.
Alloy Parts Mfg. Co., Canton, O. "Allopar."
B-N Longlife—See Burgess-Norton Mfg. Co.
Burgess-Norton Mfg. Co., Dept. D., 532-44 Peyton St., Geneva, Ill. "B-N Longlife."
(See page 627.)

Burnell Engineering Co., 536 E. Water St., Milwaukee, Wis.
Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. (See pages 607 and 741.)
Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.)
(See page 121.)

Coppins, Scott R., 329 S. Main St., Princeton, Ill. "Long Life."
Long Life—See Coppins, Scott R.
Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "Standard."
Pruyn Co., 683 N. Broad St., Philadelphia, Pa.
Roll-Rite Mfg. Co., 4 Broad St., Charleston, S. C.
Shafer Bearing Corp., 4500 Ravenswood Ave., Chicago, Ill. (See page 1051.)
Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (See page 537.)
Standard—See Marlin-Rockwell Corp.
Timken Roller Bearing Co., Canton, O.
(See page 100.)

Everything is listed under the NOUN or principal word

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- ATZCAPOTZALCO
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Bertram Motor Supply Co.
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Buffalo Bearings Co.
1839 Main St.
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2286 Michigan Ave.
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Ahlberg Bearing Co.
864 Race St.
- COLUMBUS, OHIO**
Bearings Company
75 South Fourth St.
- DALLAS, TEXAS**
Western Gear & Parts Co.
2185 Commerce St.
- DES MOINES, IOWA**
Iowa Bearings Co.
519 West 12th St.
- DETROIT, MICH.**
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2812 Grand River Ave.
- HOUSTON, TEXAS**
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- NEW YORK CITY**
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729 Granby St.
- OKLAHOMA CITY, OKLA.**
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Ahlberg Bearing Co.
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452 Burnside St.
- PHILADELPHIA, PA.**
R. & L. Bearings Co.
821 North Broad St.
- PITTSBURGH, PA.**
Condon Bearing & Supply Co.
423 Highland Building
- PROVIDENCE, R. I.**
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45 Broadway
- ST. LOUIS, MO.**
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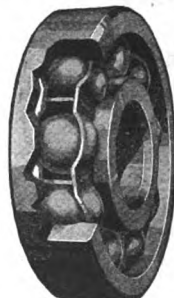
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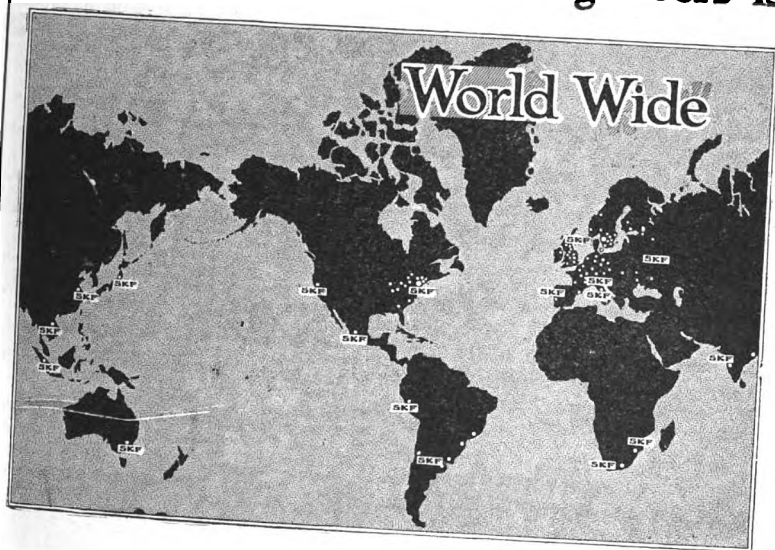
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New Orleans	Bearings Service Co.	755 St. Charles St.	Main	4059
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 Bound Brook Oil-less Bearing Co., Bound Brook, N. J. "Nigrum."
 Cleveland Graphite-Bronze Co., 30th St. & Chestnut Ave., Cleveland, O.
 Dunham Co., Thos., Aurora, Ill. (See page 145.)
 Massachusetts Oilless Bearings Co., Burnside Court, Worcester, Mass. "F-L."
 Mechanical Devices Co., 22 S. La Salle St., Aurora, Ill.
 Metaline Co., 43 Third St., Long Island City, N. Y.
 Nigrum—See Bound Brook Oil-less Bearing Co.
 Nolu Oilless Bearing Co., 6 E. Johnson St., Philadelphia, Pa.
 O. & S. Bearing Co., 215 S. Artillery Ave., Detroit, Mich.
 P-L—See Massachusetts Oilless Bearings Co.
 Randall Graphite Products Corp., 711-21 Fulton St., Chicago, Ill.
 Reliance Machine & Specialty Co., 101-03 Green St., Boston, Mass.

BEARINGS, PROPELLER SHAFT STEADY
 —See Bearings, Drive Shaft Steady

BEARINGS, REAR AXLE THRUST, FOR FORDS—See Bearings, Drive Gear Ball Thrust

BEARINGS, Reground Ball

- Ahlberg Bearing Co., 217-27 E. 29th St., Chicago, Ill.
 Bearings Co. of Penna., 684 N. Broad St., Philadelphia, Pa.
 Kelly Ball Bearing Co., 651 Turk St., San Francisco, Cal.
 New York Bearings Co., 211 W. 59th St., New York, N. Y.
 Pacific Ball Bearing Co., 415 W. Pico St., Los Angeles, Cal. (See page 90.)
 Pruyn Co., 683 N. Broad St., Philadelphia, Pa.
 R. & L. Bearing Co., 1790 Broadway, New York, N. Y.
 Sherwood, A. S., 258 W. 54th St., New York, N. Y.
 Western Bearings Co., 2831-35 S. State St., Chicago, Ill. (See page 90.)

BEARINGS, Roller

- Ahlberg Bearing Co., 217-27 E. 29th St., Chicago, Ill. "Trojan."
 American Roller Bearing Co., 416 Melwood Ave., Pittsburgh, Pa.
 Asch and Co., Inc., 10-24 W. 61st St., New York, N. Y. (Eastern & Southern Distributors for "Gilliam" Bearings.) (See page 247.)
 Ball & Roller Bearing Co., 22 Maple Ave., Danbury, Conn. "Barbo."
 Barbo—See Ball & Roller Bearing Co.
 Bock Bearings Co. (Division of the Standard Parts Co.), Toledo, Ohio. (See page 119.)
 Bower Roller Bearing Co., Detroit, Mich. (See page 111.)
 C & C Sales Corp., 1755 Broadway, New York, N. Y. (Distributors.) (See page 203.)
 Dohner—See Ohio Metal Products Co.
 Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 415.)
 Gilliam—See Spencer Metal Products Co.
 Gilliam Mfg. Co., Canton, O. (See page 110.)
 Graham Roller Bearing Corp., Coudersport, Pa. (See page 110.)
 Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (Dealers.) (See page 102.)
 Hart Roller Bearing Co., 25 Main St., Orange, N. J.
 Hyatt Roller Bearing Co., Detroit, Mich. (See page 119.)
 Makutchan Roller Bearing Co., 4100 Ravenswood Ave., Chicago, Ill. "Twinro."
 Marlin-Rockwell Corp., 247 Madison Ave., New York, N. Y. "S. R. B."
 Michigan Bearings Co., 5959 Woodward Ave., Detroit, Mich. (Dealers.) (See page 119.)
 Norma Co. of America, Anable Ave., Long Island City, N. Y. (See page 68.)
 Ohio Metal Products Co., Free Press Bldg., Detroit, Mich. "Dohner."
 S. R. B.—See Marlin-Rockwell Corp.
 Shafer Bearing Corp., 4500 Ravenswood Ave., Chicago, Ill. (See page 1051.)
 Spencer Metal Products Co., Spencer, O. "Gilliam."
 Standard Machinery Co., Auburn, R. I. (See page 115.)
 Timken Roller Bearing Co., Canton, O. (See page 109.)
 Trojan—See Ahlberg Bearing Co.
 Twinro—See Makutchan Roller Bearing Co.
 Universal Auto Parts Co., 268 Natillia St., Portland, Ore. (Distributors.) (See page 157.)
 Whitney Bearing Corp., 536 Lake Shore Drive, Chicago, Ill. (See page 110.)
 Wright Roller Bearing Co., 20th St. & Indiana Ave., Philadelphia, Pa.

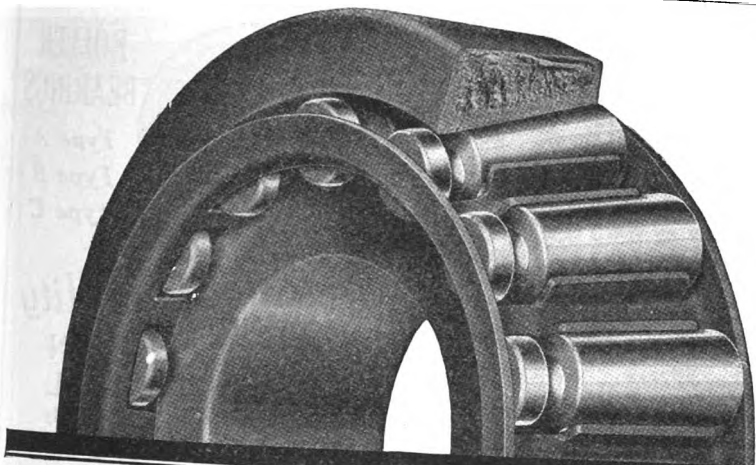
BEARINGS, THRUST—See Bearings, Ball; also Bearings, Roller

BEDS or BERTHS, Car and Camp

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- Allrite—See Kline, C. A.
 Anton & Ackerman Co., 122-24 Kansas Ave., Topeka, Kans.
 Any-Kar—See Peoria Auto-Kot Co.
 Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.
 Autobed—See Tentobed Co.
 Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich.
 Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
 Basford, H. B., 431 Sutter St., San Francisco, Cal.
 Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo.
 Colburn Mfg. Co., 1110 Ide Ave., Spokane, Wash.
 Demoln—See Des Moines Tent & Awning Co.
 Des Moines Tent & Awning Co., 913-15 Walnut St., Des Moines, Ia. "Demoln."
 Enterprise Bed Co., Hammond, Ind.
 4 in 1 Auto Bed Co., 919 Sonoma St., Vallejo, Cal.
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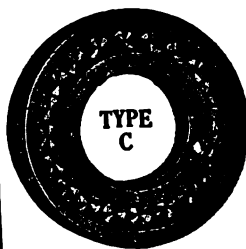
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Some Exclusive and Incomparable Features Distinctive of
the Whitney (Parallel) Roller Bearing

The Keystone principle, as applied to roller bearings, transmit all loads, either thrust or side, directly to the face of the rollers only, as well as vertical to their axis constitutes the most recent development in modern anti-friction roller bearings guaranteeing possibilities never before realized.

The old and famous Keystone principle is employed and thoroughly practical.

The parallel roller principle is a fundamental factor. Greater speed under a heavy load is possible. Cage friction is reduced to negligible quantity.

May be safely guaranteed during the life of any car.

The rollers have no tendency to work out from under the load.

All of the rollers are in contact with the bearing members all of the time.

Self-adjustment is safe, perfectly accurate and automatic at all times.

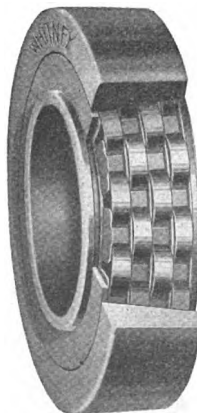
The load never touches the ends of the rollers.

The rollers have no tendency to work endwise under a load.

All the load rests on the cylindrical face of the rollers only, vertical to the axis of the rollers.

The rollers cannot jam, wedge or get locked.

Complete Data Upon Request



Roller Assembly

WHITNEY BEARING CORPORATION

CHICAGO,

536 LAKE SHORE DRIVE

ILLINOIS

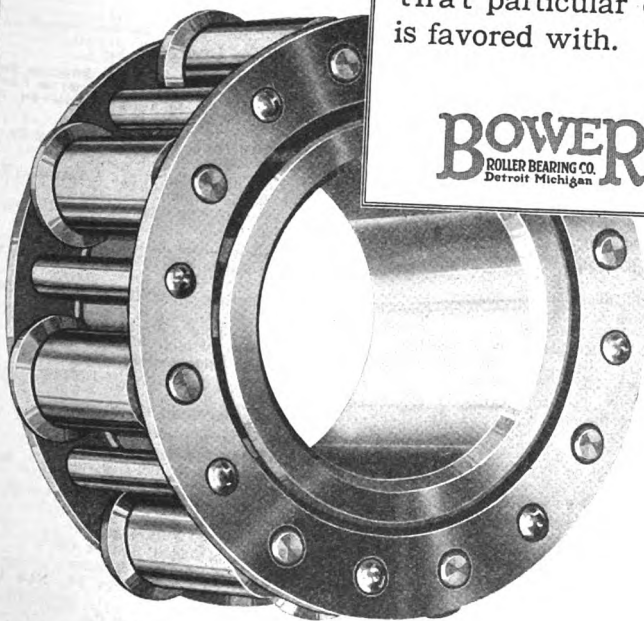
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CARRIES THE LOAD

TAKES THE THRUST

BOWER Roller Bearings in a car speaks volumes for the engineering care that particular car is favored with.

BOWER
ROLLER BEARING CO.
Detroit Michigan



Exclusive Bower Features

Separate bearing surfaces for load and thrust. Parallel raceways. Self-aligning. Never need adjusting. Does not develop end thrust under loads. Will not bind or end-slip.



BEDS or BERTHS, Car and Camp (Continued)

Kline, C. A., 2048 Mission St., San Francisco, Cal. "Allrite," "Gudnite."
 McMillin—See MacKenzie-Waterhouse Co.
 MacKenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "McMillan."
 Miller Auto Bed Co., 1103 E. 12th St., Oakland, Cal.
 Musso, F. G., 194 W. Santa Clara St., San Jose, Cal.
 Peoria Auto-Kot Co., 115 N. Madison St., Peoria, Ill. "Any-Kar."
 Perfection—See Pneumatic Mfg. Co.
 Plummer Mfg. Co., W. A., San Francisco, Cal.
 Pneumatic Mfg. Co., 124-28 Atlantic Ave., Brooklyn, N. Y. "Perfection."
 Red Seal—See Schaefer Tent & Awning Co.
 Schaefer Tent & Awning Co., 1421-23 Larimer St., Denver, Colo. "Red Seal."
 Schilling Co., L. F., Salem, O.
 Stoll Mfg. Co., 3250 Larimer St., Denver, Colo.
 Tentobed Co., 2200 W. Jackson Blvd., Chicago, Ill. "Autobed."
 Tourist Auto Equipment Co., Dahlgren, Ill. "Handy Camp."
 Wolfe & Co., 417 Pontius Ave., Seattle, Wash.

BEDS or BERTHS, Car and Camp, for Fords

(Special beds or berths for use either in the car or under tent when touring)

Allrite—See Kline, C. A.
 Booth & Co., Sheldon, 1505 E. 53d St., Chicago, Ill.
 Gudnite—See Kline, C. A.
 Kline, C. A., 2048 Mission St., San Francisco, Cal. "Allrite," "Gudnite."
 McMillin—See MacKenzie-Waterhouse Co.
 MacKenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "McMillan."
 Schilling Co., L. F., Salem, O.
 Wolfe & Co., 417 Pontius Ave., Seattle, Wash.

BELLS, Electric

(For use as a warning signal in place of horn)

Bunyan Mfg. Co., 9805 Madison Ave., Cleveland, O. "Liberty."
 Cathedral Bell Mfg. Co., Cathedral & Chase Sts., Baltimore, Md.
 Delta-Star Electric Co., 617-31 W. Jackson Blvd., Chicago, Ill.
 Electric Sentry Co., 533 N 13th St., Philadelphia, Pa.
 Liberty—See Bunyan Mfg. Co.
 Lyon Mfg. Co., 2 E. Lombard St., Baltimore, Md. "Victory."
 Victory—See Lyon Mfg. Co.

BELLS, Electric, for Fords

(For use as a warning signal in place of horn)

Bunyan Mfg. Co., 9805 Madison Ave., Cleveland, O. "Liberty."
 Liberty—See Bunyan Mfg. Co.

BELLS or GONGS, Mechanical

(For use as a warning signal in place of horn)

Bevin Bros. Mfg. Co., East Hampton, Conn.

East Hampton Bell Co., Walnut Ave., East Hampton, Conn.
 Mossberg Co., Frank, Attleboro, Mass.
 Relter, G. C., Canton, O.

BELT ADJUSTERS FOR FORDS—See Adjusters, Fan Belt

BELT CONNECTORS—See Fasteners, Belt

BELT COUPLINGS—See Fasteners, Belt

BELT DRESSING—See Dressing, Clutch

BELT FASTENERS—See Fasteners, Belt

BELT GUIDES FOR FORDS—See Guides, Fan Belt

BELT LACING—See Fasteners, Belt

BELTING, Leather

(Flat and Round Belting for Fan Belts; for Endless Fabric Belts—See Belts, Endless Fabric; for V-Belts—See Belts, V; for Spiral Wire Belts—See Belts, Spiral Wire)

Adheso—See Hide, Leather & Belting Co.
 Almco—See Auto Leather Mfg. Co.
 Auto Leather Mfg. Co., Arlington, N. J. "Kaeenjay," "Almco."
 Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."
 Bantlin Co., Julius J., Cincinnati, O.
 Bonner & Barnwell, 30 Church St., New York, N. Y.
 Boston Leather Specialties, 30 Merrimac St., Boston, Mass.
 Bradford Belting Co., 201 Walnut St., Cincinnati, O. "Monarch."
 Bull's Head—See Schleren Co.
 Calasco—See Chicago Auto Leather Specialty Co.
 Casco—See Schleren Co.
 Charter Oak—See Palmer & Co.
 Chibeco—See Chicago Belting Co.
 Chicago Auto Leather Specialty Co., 6637 S. Halsted St., Chicago, Ill. "Calasco."
 Chicago Belting Co., 113-25 N. Green St., Chicago, Ill. "Chibeco."
 Cino—See Mooney Belting Co.
 Climax—See Hudson Belting Co.
 Coheco—See Williams & Sons.
 Coe & Brown, 204 George St., New Haven, Conn.
 Comber—See Rahmann & Co.
 Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Dixie—See Schleren Co.
 Duxbak—See Schleren Co.
 Eagle—See Schleren Co.
 Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Page Belting Co., Concord, N. H.)
 Endurmo—See Missouri Belting Co.
 Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Belts.) (See page 113.)
 Fitwell—See Bailey-Fitwell Co.
 G. & K.—See Graton & Knight Mfg. Co.
 Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)

Everything is listed under the NOUN or principal word

EVANS-LAWRIE COMPANY

Replacement distributors for manufacturers of high grade standard parts

Graton & Knight Fan Belts
Clutch Leathers and Specialties

McCord Gaskets Fitzgerald Gaskets

Hayes Wire Wheels Houk Wire Wheels

Hayes Wood Wheels, Rims and Parts

Spring Bolts, Spindle Bolts, Bushings
Axle Shafts, etc., etc.

Victor Motor Bearings

Manufacturers of standard parts desirous of
high grade replacement distribution
are invited to correspond with
us immediately

EVANS
LAWRIE
COMPANY



Com- 782
monwealth Ave.
BOSTON, MASS.
AUTOMOTIVE SPECIALTIES

The Moloney Belting Company

Makers of Pure Oak Tanned
Leather Belting for all
Transmission
Purposes

Automobile Fan Belts
Clutch Leathers

BRANCHES

Norfolk New Orleans Dallas Portland

MAIN OFFICE AND FACTORY

124-128 N. Franklin Street Chicago

Standardized Automotive Leathers

Flat and "V" Fan Belts
Straps, Clutch Leathers
Coupling Discs, Boots, Etc.

All made at the home of
Standardized
Leather Belting

Our new catalog No. 103, fully
illustrated, sent upon request.

Automotive Division
The Graton & Knight Mfg. Co.
Worcester, Mass.

"Patience is a Virtue"—

But
patience is
not required
when
dealing with



Farran-Kinney Company

7 South Dearborn Street, Chicago, Ill.

Manufacturers and Distributors of

Farran-oid Belts and Belting

Farran-Kinney Pistons
Piston Pins, Valves

All Farran-Kinney products are doubly
guaranteed—For Performance—For Fit.

Our production schedule insures prompt
deliveries. Made right. Packed right. Prices
right. Sold under the correct merchandis-
ing policy.

Comprehensive Catalogs Upon Request

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BELTING, Leather (Continued)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Adheso," "Wet-prufe," "Kork-O-Grip."
 Moo-Hoo—See National Leather Belt Co.
 Houghton & Co., E. E. 240 W. Somerset St., Philadelphia, Pa. "Vim."
 Hudson Belting Co., 1-3 Eaton Pl., Worcester, Mass. "Climax," "Rival," "Hydro," "Mermaid."
 Hunt Co., Henry C., 261 Franklin St., Boston, Mass.
 Hutchinson Bros. Cut Leather Co., 1928 W. Eighth St., Cincinnati, O.
 Hydro—See Hudson Belting Co.
 Jewell Belting Co., 55 Trumbull St., Hartford, Conn.
 Kaenjay—See Auto Leather Mfg. Co.
 Kork-O-Grip—See Hide Leather & Belting Co.
 Latigo—See Perkins-Campbell Co.
 Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
 Leather Products Co., 612-20 Baymiller St., Cincinnati, O.
 Mermaid—See Hudson Belting Co.
 Missouri Belting Co., 1021-29 S. Grand Ave., St. Louis, Mo. "Endurmo."
 Moloney Belting Co., 124-28 N. Franklin St., Chicago, Ill. (See page 113.)
 Monarch—See Bradford Belting Co.
 Mooney Belting Co., 444 W. Sixth St., Cincinnati, O. "Cino."
 National Leather Co., 161 South St., Boston, Mass.
 National Leather Belt Co., 343 E. 38th St., New York, N. Y. "Hoo-Hoo."
 Norwich Belt Mfg. Co., N. Main St., Norwich, Conn.
 Page Belting Co.—See Eckhouse & Co.
 Palmer & Co., N. 571 Iranistan Ave., Bridgeport, Conn. "Charter Oak."
 Perkins-Campbell Co., Cincinnati, O. "Latigo." (See page 299.)
 Rahmann & Co., Geo., 31 Spruce St., New York, N. Y. "Comber."
 Ranville Co., F., 241-49 Pearl St., Grand Rapids, Mich.
 Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
 Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa. "Tannate."
 Rival—See Hudson Belting Co.
 Rock Oak—See Schieren Co.
 Royal—See Schieren Co.
 Schieren Co., Chas. A., 76 Ferry St., New York, N. Y. "Duxbak," "Bull's Head," "Rock Oak," "Royal," "Eagle," "Casco," "Dixie."
 Tannate—See Rhoads & Sons.
 Taylor Belting Co., 247 S. Meridian St., Indianapolis, Ind.
 Vim—See Houghton & Co.
 Weatherhead-Thompson Co., Pawtucket, R. I.
 Wetprufe—See Hide, Leather & Belting Co.
 Williams & Sons, I. B., 9 Orchard St., Dover, N. H. "Coheco."
 Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.

BELTS, COTTON—See Belts, Endless Fabric**BELTS, Endless Fabric**

(For Leather Belts—See Belting, Leather; also Belts, V; for Wire Belts—See Belts, Spiral Wire)

A-B-C—See American Brake-Lining Co.
 Advance Automobile Accessories Corp., 1721 Prairie Ave., Chicago, Ill.
 Advance Packing & Supply Co., 64 E. Lake St., Chicago, Ill. "Vulcan."

Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y.
 American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 533.)
 Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
 Bear-Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Bond Co., Charles, 617 Arch St., Philadelphia, Pa. "Fabritex."
 Brophy Belting & Supply Co., Ferry St., Madison, Ind.
 Brown Mfg. Co.—See Cassidy Co.
 C. O. T.—See Tingley & Co.
 Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for Brown Mfg. Co., Arthur S. Tilton, N. H. "Tilton.")
 Curry Co., J. W., 2615 Cummins St., Cincinnati, O.
 Deford Co., 729 Atlantic Ave., Boston, Mass.
 Diamond Holdfast Rubber Co., 23 Auburn Ave., Atlanta, Ga. "Holdfast."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (New Jersey Distributors for "Vulco" Belts.) (See page 495.)
 Fabreeka Belting Co., Boston, Mass. (See page 115.)
 Fabritex—See Bond Co.
 Farran-Kinney Co., 7 S. Dearborn St., Chicago, Ill. "Farran-old." (See page 113.)
 Farran-Old—See Farran-Kinney Co.
 Fisher Mfg. Co., 735 O St., Lincoln, Neb.
 Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
 Geisel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa. "Perfection."
 General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.
 Germantown—See Smith Belting Co.
 Gilmer Co., L. H., Philadelphia, Pa. (See pages 116 and 117.)
 Holdfast—See Diamond Holdfast Rubber Co.
 Lakewood Fabric Belting & Mfg. Co., 1618 Highland Ave., Lakewood, O.
 Main Belting Co., 1219 Carpenter St., Philadelphia, Pa.
 Master-Cord Belt Co., 3102 Downing St., Denver, Colo.
 Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
 Moloney Belting Co., 124-28 N. Franklin St., Chicago, Ill. (See page 113.)
 Motor Belt & Mfg. Co., 3613 E. 27th St., Kansas City, Mo. "Old Hickory."
 Multibestos Co., Walpole, Mass. (See page 527.)
 Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, O.
 Old Hickory—See Motor Belt & Mfg. Co.
 Perfection—See Geisel Co.
 Poison Rubber Co., 1657 Doan Ave., Cleveland, O.
 Powers Mfg. Co., Waterloo, Iowa. (See page 530.)
 Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
 Rie-Nie—See Durkee-Atwood Co.
 Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tuflex."
 Rosendale-Reddaway Belting & Hose Co., 39 W. 19th St., New York, N. Y.
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., Middletown, Conn. "Rusco." (See page 530.)
 Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. "Germantown." (See page 115.)
 Tilton—See Cassidy Co.
 Tingley & Co., Chas. O., Ross St. & St. George Ave., Rahway, N. J. "C. O. T."

Everything is listed under the NOUN or principal word

A Car Owner Who Once

Uses on his Fan

**FABREEKA
BELTING**will insist upon getting it
every timeFABREEKA is the LAST
WORD in EFFICIENCYDoes Not Stretch Does Not SlipSold made up to fit any pleasure
car or truck using a flat belt.

Also sold by the roll in any length.

FABREEKA BELTING CO.

BOSTON (9) MASS.

New York Branch:

523-29 Eighth Avenue :: New York City

Smith Fan Belts

Does the pulley side of the belt you use soon develop cuts and cracks and so break prematurely? All ordinary fabric belts do. If you wish to avoid this and find how good a really scientific ally built fabric belt can be, order a trial lot of SMITH BELTS. The price is right too.

Woven endless fan belts for all cars.

Also Ford Transmission Lining, Anti-Squeak, Webbing and Tape.

Manning J. Smith Belting Co.

39 East Ashmead Street

Germantown

Philadelphia

**STANDARD
MACHINERY COMPANY'S
BEARINGS****The Right Bearings for Every Part and Every Purpose**

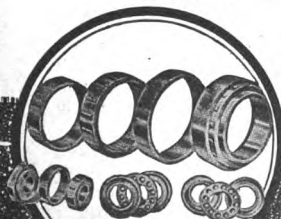
We are Specialists on the whole subject of bearings. We understand every phase of this intricate problem. We know the functions and uses of ball bearings and of roller bearings and will give expert advice concerning the use of either. We make both kinds of bearings and they are the best that can be made. They will stand up and wear indefinitely under the severest test. Our journal and thrust bearings for automobiles, motor trucks and general machine service have been perfected through years of experience.

STANDARD MACHINERY COMPANY

AUBURN, R. I.

In quantity, price and promptness of delivery we leave nothing to be asked for.

Send blue prints and specifications and we'll solve all the problems.



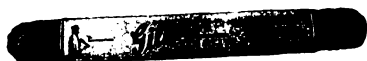
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A BELT FOR EVERY CAR

With the introduction of the Gilmer Round Type Belt for grooved pulleys there is now a Gilmer for *every* car using a fan belt.

The same superiorities that have always characterized the Gilmer Belt are to be found in this latest addition to the family, because it, too, contains no leather or rubber to disintegrate or vulcanize under the action of heat, oil and moisture. Woven endless, to exactly fit each particular model of car.

Each belt is individually wrapped and mounted. On each wrapper are printed the makes and models the belt will fit. Round belts are packed in cartons of five, flat belt in cartons of ten.



L. H. GILMER CO., Philadelphia, Pa.

Gilmer
WOVEN ENDLESS
FAN BELTS

ROUND BELT GROUPINGS

No.	Price	Car	Year	Model
01	\$2.00	Chevrolet	1919-20	FA-FB
		Samson Tractor	1919-20	M
		Stephens	1 20	70-80-90
02	1.00	Cole	1917-19	870, G-X, H, H-X, G
		Marmon	1920-21	
		Olds	1918-20	45, 45-A, 45-B
		Sheridan "S"	1920-21	
03	2.00	Oakland	1918-20	B-34
		Olds	1917-20	37, 37-A
		Scripps-Booth	1918-20	6-39, B-39
04	2.00	Acme Truck	1917-20	A
		Cunningham		M
		G. M. C. Truck	1916-21	41, 71, 101, 16-K
05	3.00	Nash	1918-21	681-2-3-4-5-6-7
		Nash	1920	P-4 cyl.
		Pa kard	1917-20	D, E
		Packard		228, 338
06	2.00	Case	1918-21	All Models
		Chevrolet		25 1 1-4 ton
		Chevrolet	1920	6-40
		Commerce	1917-20	E, F
		G. M. C. Truck	1917-19	15, 16, 31
		Grant	1918-20	G, GK, H, HX
		Jordan	1917-19	B, C, F
		Olds	1921	43-A
		Roamer	1919-20	6-54
		Sandow Trucks		C-CG-I
		Velie Truck	1921	48
07	2.00	Westcott	1919-20	C-48
08	2.00	Hupmobile	1917-20	R
		Chevrolet	1918-20	490
011	3.00	Scripps-Booth		G
012	2.00	Winton	1919-20	25
		Marmon	1917	
		Reo	1920-21	T-6, U-6
		Velie		28, 38
014	3.00	Pierce Arrow	1912	QQ
		Pierce Arrow	1915	A2
		Winton		22, 22A
015	3.00	Velie	1915-19	15-24-27-39

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Gilmer WOVEN FAN BELTS FLAT TYPE

ENDLESS

MAKE	YEAR	MODEL	Price \$.50
Group 1.			
Ford	1911-16	T	
National	1917-18-19	Highway 12	
Stearns-Knight		Eight	
Group 2.			Price \$.50
Ford	1917-18-19-20	T	
Group 2A			Price \$.50
Ford	1921	T Com. Aug. 1, 1920	
Group 3.			Price \$1.00
Allen	1915-16-17-18-19	B4-37-41	
Buick	1914	B24-B25-B36-B37-B38-B55	
Buick	1915	C24-C25-C36-C37-C64-C55-D37	
Buick	1916	D54-D55	
Chandler	1916-17-18-19-20-21	All Models	
Dodge	1917-18-19-20-21	All Models	
Dort	1920-21	12-12C-17-17S-30-39L-49-491	
Elcar	1920	4 cyl. D-G-H-K	
Gardner	1920-21	All Models	
Geromino	1918	6A-45	
Handley-Knight	1921	Model 90 up to car No. 10,4399 in 1918	
Overland	1917-18	Model 75	
Overland	1916	All Models	
Patterson	1920	6-50	
Pilot	1921		Price \$1.00
Group 4.			
Briscoe	1916-17-18-19	B4-24	
Crow-Elkhart	1920	10-10C-12A-12AC-21	
Dort	1915-16-17-18-19-20	15-15S-17A-17AS	
Elgin	1916-17-18-19	"g"	
Grant	1916-18	T & V.	
Hollier	1917-18-19	Six	
Woods	1918		Price \$1.00
Group 5.			
Apperson	1916-17-18-19		
Jeffrey	1917	6 871	
Moon	1918-19	6-36	
National	1917-18-19	"g"	
Overland	1915	80-81	
Overland	1916	82	
Paige	1920	6-42	
Paige	1919	15 small Six	
Saxon	1916-17-18-19-20-21	"g"	
Willis-Knight	1916	84	
Willis-Knight	1920-21	20	
Group 6.			Price \$1.00
American	1917	A	
American	1917-18-19-20	B	
Auburn	1918	Continental Motor	
Crow-Elkhart	1916-17-18-19-20	6 cyl.	
Dodge	1916-18	4	
Empire	1917-18	45-50-51	
Geromino	1917	44-45	
Olde	1916-17-18-19	6-40	
Madison	1918-19	25	
Patterson	1916-17-18-19	6	
Stephens	1916-17	Salient 6	
Studebaker	1916-17-18-19	4 and 6	
Velle	1916-17	22-48	
Group 7.			Price \$1.00
Buick	1918	E44-45-46-47-49-50	
Buick	1919	H44-45-46-47-49-50	
Buick	1920	K44-45-46-47-49-50	
Maxwell	1916-17		Price \$1.00
Group 8.			
Maxwell	1916-17	C40 and C42	
Group 9.			Price \$1.25
Maxwell	1918-19	25	
Group 10.			Price \$1.00
Elgin	1919-20-21	48K and K-1	
Huffman	1920-21	W	
Lexington	1917-18-19	"Minute Man Six"	
Reo "4"	1916-17-18-19	R & S	
Sears	1917-18-19-20	P-A-P-B-P-C	
Group 11.			Price \$1.00
Buick	1916-17	D44-45-46-47	
Buick	1917	D34-D35	
Buick	1918	E34-E35	
Buick	1918	E44-E45-E47-E49-	
Crow-Elkhart	1921	E60 Early Type	
Group 12.			Price \$1.00
American	1920	C & Silent Six	
Anderson	1916-17-18-19-20	With 7W Motor	
Chandler	1914-15	All Models	
Columbia	1918-19	Rutemeyer Motor	
Davis	1916-17-18-19-20	6-18 and 20	
Haynes	1915-16-17-18-19-20	30-32-45-46-47-48-49	
Jackon	1920	6-38 with 7W Motor	
Kiesel	1915-16-17-18	100 Point Six	
Liberty	1916-17-18-19	"g"	
Studebaker	1920-21	Big Six and Special Six	

MAKE	YEAR	MODEL	Price \$1.00
Group 13.			
Reo	1915-16-17-18-19	M & N 6 cyl.	
Group 14.			Price \$1.00
Maxwell	1915	22-25 S-H Starter	
Group 15.			Price \$1.00
Dorris	1921	6-80	
Maxwell	1915	22-25 G & D Starter	
Group 16.			Price \$1.25
Maxwell	1920-21	21	
Monroe	1918-19-20-21	M4	
Group 17.			Price \$1.00
Biddle	1916-17-18-19	D & H	
Bour Davis	1920	21-SFR	
Case	1915-16	25-30	
Chalmers	1916-17-18-19-20-21	35-A-B-C-D	
Malbohm	1917-18-19-20-21	B	
Stearns-Knight	1920-21	L4	
Group 18.			Price \$1.00
Briscoe	1920-21	4-34	
Case	1917	T	
Dieck Flyer	1920	HS-70	
Hudson	1916-17-18-19-20-21	Super Six	
Kiesel	1916-20-21	"Custom Built Six"	
Group 19.			Price \$1.00
Columbia	1920-21	C-8	
Davis	1920-21	51-52-53-54-55-56-57	
Elcar	1920	6 cyl. D-G-H-K	
Huffman	1920-21	R	
Jackson	1920	6-38 with H-S Motor No. 11,000	
Lexington	1920	D40-E40-F42-F40	
Mitchell	1918-19-20-21	D	
Nelson	1920	C38	
Westcott	1920-21		Price \$1.00
Group 20.			
Climber	1919-20	T & S	
Jeffrey	1917	472	
Marmion	1916-17	34	
Merrow	1916-17-18-19-20-21	"g"	
Overland	1917-18	Model 85-4	
Overland	1918-19	All Model 90's after car No. 104,400 in 1918	
Owen Magnetic	1918-19-20	W-42	
Patterson	1920-21	7R Motor	
Roamer	1918	D4-75	
Templar	1917-18-19-20	4-45	
Group 21.			Price \$1.00
Essex	1919-20-21		
Grant	1920-21		Price \$1.00
Group 22.			
King	1915-16-17-18-19-20-21	D-E-E-E-F-G-H	
Group 23.			Price \$1.00
Allen	1920-21	43	
Buick	1921	19-21-44-45-46-47-48-49-50	
Moon	1920	6-48	
ReVerre	1918-19-20	C-D-E	
Templar	1921	4-45	
Group 24.			Price \$1.00
Chevrolet	1916-17	490	
Group 25.			Price \$1.00
Paige	1916	6-46	
Paige	1917	6-51	
Paige	1918	6-55 1st 4150 cars	
Saxon	1920-21	125-4 cpl.	
Group 26.			Price \$1.00
Chalmers	1915	28 26B-26C-29-32A	
Chalmers	1916	32B	
Dorris	1919-20	6-80	
Liberty	1919-20	10B-After 37500 cars	
Paige	1918-19-20-21	6-55-After 4150 cars	
Group 27.			Price \$1.00
Commonwealth	1917-18-19-20	All S	
Crow-Elkhart	1921	HS-50	
Dieck Flyer	1920-21	4—Light Four	
Overland	1920-21		Price \$1.00
Group 28.			
Anderson	1920-21	Series 20	
Auburn	1920-21	6-39 H-K	
Columbia	1920-21	C-75	
Hanson	1920-21	654 With 7R Motor	
Harrout	1920-21	A-A-2	
Jackson	1920	6-38 With 7R Motor	
Jordan	1920-21	M	
Moon	1921	6-48	
Noma	1920-21	Series C	
Paige	1921	6-66	
Patterson	1920	6-50	
Velle	1920-21	48	
Westcott	1920	With 7R Motor	

GILMER Flat Type Woven Endless Fan Belts are packed in attractive sales help cartons that make merchandising easy and economical. It is a simple matter to carry a complete stock of GILMER Belts at small cost. Each carton contains 10 belts of one group. Each belt is individually wrapped and the group number and the word GILMER are stenciled on the belt itself.

Please mention The Automobile Trade Directory

BELTS, ENDLESS FABRIC (Continued)

Tuftex—See Rochester Woven Belting Corp.
 Vulcan—See Advance Packing & Supply Co.
 Vulco—See Gates Rubber Co.
 Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.

BELTS, ENDLESS FABRIC, FOR FORDS—

See Belts, Fan

BELTS, Fan, for Fords

(Adjustable and endless belts of Leather, Rawhide and Woven Fabric)

Advance Automobile Accessories Corp., 1721 Prairie Ave., Chicago, Ill.
 Almco—See Auto Leather Mfg. Co.
 Auto Leather Mfg. Co., Arlington, N. J. "Kaenjay," "Almco."
 Automotive Leather Products Co., 211 E. 188th St., New York, N. Y. "Sho-Tan."
 Avey Leather Goods Mfg. Co., 804-10 Evans St., Cincinnati, O.
 Badger Handle Co., 415-19 Third St., Milwaukee, Wis.
 Bantlin Co., Julius J., Cincinnati, O.
 Bear-Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Beaver—See Mechanical Rubber Co.
 Blue Ribbon—See McMonies, J. R.
 Bond Co., Charles, 617 Arch St., Philadelphia, Pa. "Fabritez."
 Boston Leather Specialties, 30 Merrimac St., Boston, Mass.
 Central Brass & Fixture Co., Segler & Hughes Sta., Springfield, O.
 Champney—See Mitchell & Smith.
 Charter Oak—See Palmer & Co.
 Chibeco—See Chicago Belting Co.
 Chicago Belting Co., 113-25 N. Green St., Chicago, Ill. "Chibeco."
 Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill. "Krome."
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Cloud Accessories Corp., 1403 S. Wabash Ave., Chicago, Ill. "Morgancord."
 Coe & Brown, 204 George St., New Haven, Conn.
 Curry Co., J. W., 2615 Cummins St., Cincinnati, O.
 Deford Co., 729 Atlantic Ave., Boston, Mass.
 Detroit Leather Works, 633 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 E-Z-Put-On—See Paulus, Alfred H.
 Eckhouse & Co., Walter, 616-23 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Page Belting Co., Concord, N. H.)
 Economy Auto Supply Co., 268 Halscy St., Newark, N. J. (New Jersey Distributors for "Vulco" Belts.) (See page 495.)
 Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Belts.) (See page 118.)
 Fabritez—See Bond Co.
 Federal Asbestos Co., 149 Hamburg Ave., Paterson, N. J. "Fordbestos."
 Flex-O-Tyte—See Stephens Rubber Co.
 Fordbestos—See Federal Asbestos Co.
 G. & K.—See Graton & Knight Mfg. Co.
 Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
 Geisel Co., Otto E., 2200-08 Oxford St., Philadelphia, Pa. "Perfection."
 General Tanning Corp., Chester, Mt. Vernon & Medborn Ave., Irvington, N. J.
 Gilmer Co., L. H., Philadelphia, Pa. (See pages 116 and 117.)
 Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)
 Hager & Son, Chas., 1936 Broadway, New York, N. Y.
 Hazetrom Bros. Mfg. Co., Lindsborg, Kans.
 Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Wetprufe," "Adheso."
 Holitt Spring Belt Co., 195 Paterson St., Paterson, N. J.
 Hunt Co., Henry C., 261 Franklin St., Boston, Mass.
 Indigan—See National Leather Co.
 Kaenjay—See Auto Leather Mfg. Co.
 Krome—See Chicago Rawhide Mfg. Co.
 Lakewood Fabric Belting & Mfg. Co., 1516 Highland Ave., Lakewood, N. J.
 Latigo—See Perkins-Campbell Co.
 Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsaco."
 Linsco—See Lins Mfg. Co.
 McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind.
 McMonies, J. R., 1911 N. Dakota St., Spokane, Wash. "Blue Ribbon."
 Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Uscu," "Beaver."
 Mikesell Brothers Company, 150 N. La Salle St., Chicago, Ill. (See page 530.)
 Mitchell & Smith, Framingham, Mass. "Champney." (See page 119.)
 Morgancord—See Cloud Accessories Corp.
 Multibestos Co., Walpole, Mass. (See page 527.)
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. "Nathigo." (See page 165.)
 Nathigo—See Nathan Novelty Mfg. Co.
 National Leather Co., 161 South St., Boston, Mass. "Indigan."
 National Leather Belt Co., 242 E. 33th St., New York, N. Y.
 Norwich Belt Mfg. Co., N. Main St., Norwich, Conn.
 Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, Ohio.
 Page Belting Co.—See Eckhouse & Co.
 Palmer & Co., N., 571 Iranistan Ave., Bridgeport, Conn. "Charter Oak."
 Paulus, Alfred H., 2507-11 Potter St., Philadelphia, Pa. "E-Z-Put-On."
 Perfection—See Geisel Co.
 Perkins-Campbell Co., Cincinnati, O. "Latigo." (See page 299.)
 Powers Mfg. Co., Waterloo, Ia. (See page 530.)
 Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
 R-E—See Roose Mfg. Co.
 Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
 Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.
 Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tuftex."
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."
 Rose Mfg. Co., Frank, Hastings, Neb. (See page 675.)
 Rugg & Co., E. L., Newark, O.
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., Middletown, Conn. "Rusco." (See page 530.)
 Self Adjusting Belt Co., Watertown, S. Dak.
 Sensation—See Voerhes Rubber Mfg. Co.
 Sho-Tan—See Automotive Leather Products Co.

Everything is listed under the NOUN or principal word

BOCK Taper Roller Bearings will carry all combinations of radial and thrust loads with marked efficiency, whether mounted in axles, transmissions, or other vital working parts. They are made from chrome-nickel steel, double heat treated, in a modern factory, by men long trained in precision methods of bearing manufacture.

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Toledo, Ohio
Division of The Standard Parts Company

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METAL—LEATHER—FIBRE—BELT



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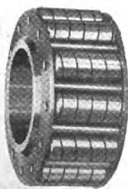
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BELTS, Fan for Fords (Continued)

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Flex-O-Tyte."
 Thermoid Rubber Co., Trenton, N. J.
 Tuftex—See Rochester Woven Belting Corp.
 Usco—See Mechanical Rubber Co.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Sensation."
 Vulco—See Gates Rubber Co.
 Wetprufe—See Hide Leather & Belting Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)
 Williams & Sons, I. B., 9 Orchard St., Dover, N. H.
 Woodworth Mfg. Co., 1-29 Starr Ave., Binghamton, N. Y.

BELTS, Spiral Wire

(For Leather Belts—See Belting, Leather; also Belts, V; for Fabric Belts—See Belts, Endless Fabric)

Calcutta—See Gardner Wire Co
 Gardner Wire Co., 5642-48 Race Ave., Chicago, Ill. "Calcutta."
 Hebb, Geo. A., Austin & Miller Sts., Newark, N. J.
 Kelley, A. F., 173 S. Main St., Providence, R. I. "Kello."
 Kello—See Kelley, A. F.
 Self Adjusting Belt Co., 420 First Ave., N. E., Watertown, S. Dak.
 Webb Mfg. Co., 245-47 N. J. R. R. Ave., Newark, N. J. (See page 753.)
 Wickwire Spencer Steel Corp., Worcester, Mass. (See page 794.)
 Wilson, Robert P., 20 Clinton St., Newark, N. J.

BELTS, V

(For Flat or Round Leather Belts—See Belting, Leather; for Fabric Belts—See Belts, Endless Fabric; for Wire Belts—See Belts, Spiral Wire)

Algoo—See Auburn Leather Goods Co.
 Almco—See Auto Leather Mfg. Co.
 Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Algoo."
 Auto Leather Mfg. Co., Arlington, N. J. "Kaenjay," "Almco."
 Automotive Leather Products Co., 211 E. 188th St., New York, N. Y. "Sho-Tan."
 Badger Handle Co., 415-19 Third St., Milwaukee, Wis.
 Bantlin Co., Julius J., Cincinnati, O.
 Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.
 Boston Leather Specialties, 30 Merrimac St., Boston, Mass.
 Calco—See Chicago Auto Leather Specialty Co.
 Chibeco—See Chicago Belting Co.
 Chicago Auto Leather Specialty Co., 6637 S. Halsted St., Chicago, Ill. "Calco."
 Chicago Belting Co., 113-25 N. Green St., Chicago, Ill. "Chibeco."
 Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.
 Coe & Brown, 204 George St., New Haven, Conn.
 Craig Mfg. Co., 803 N. 16th St., Cedar Rapids, Ia.
 Crowe—See Mechanical Belt Co.
 Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. "Flexo."
 (See page 121.)

Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind.
 (See page 595.)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Belts.)
 (See page 113.)

Flexo—See Detroit Leather Works.
 Globelt—See United & Globe Rubber Co.
 Granite—See Rahmann & Co.
 Graton & Knight Mfg. Co., Worcester, Mass. "Spartan." (See page 113.)
 Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Vee Sol," "Vee Flex."
 Hildick, Thomas H., 256 Market St., Newark, N. J.

Hudson Belting Co., 1-3 Eaton Pl., Worcester, Mass.
 Hunt Co., Henry C., 261 Franklin St., Boston, Mass.

Kaenjay—See Auto Leather Mfg. Co.
 Kontak—See Rahmann & Co.
 Latigo—See Perkins-Campbell Co.
 Master Link Belt Mfg. Co., Oklahoma City, Okla.

Mechanical Belt Co., 4032 Ravenswood Ave., Chicago, Ill. "Crowe."
 Mesinger Mfg. Co., H. & F., Austin Pl. & E 144th St., New York, N. Y.

Moloney Belting Co., 124-28 N. Franklin St., Chicago, Ill. (See page 113.)

Motor Belt & Mfg. Co., 3613 E. 27th St., Kansas City, Mo. "Old Hickory."

National Leather Belt Co., 342 E. 38th St., New York, N. Y.

National Leather Co., 161 South St., Boston, Mass.

Old Hickory—See Motor Belt & Mfg. Co.
 Perkins-Campbell Co., Cincinnati, O. "Latigo," "Traxion." (See page 299.)

Powers Mfg. Co., Waterloo, Ia.
 (See page 530.)

Rahmann & Co., Geo., 21 Spruce St., New York, N. Y. "Kontak," "Granite."
 Ranville Co., F., 241-49 Pearl St., Grand Rapids, Mich.

Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.

Rie-Nie—See Durkee-Atwood Co.

Schieren Co., Chas. A., 76 Ferry St., New York, N. Y.

Sho-Tan—See Automotive Leather Products Co.

Spartan—See Graton & Knight Mfg. Co.
 Sutherland Leather & Felt Co., 139 Beaubien St., Detroit, Mich.

Traxion—See Perkins-Campbell Co.
 United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J. "Globelt."

Vee Flex—See Hide Leather & Belting Co.
 Vee Sol—See Hide Leather & Belting Co.
 Williams & Sons, I. B., 9 Orchard St., Dover, N. H.

BENCH LATHES—See Lathes, Bench

BENCH SHEARS—See Shears, Bench

BENCH VISES—See Vises, Machinists

BENCHES, Motor Driven Saw

Whitney & Son, Baxter D., Winchendon, Mass.

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FLEXO BELTS are made of sections, cut only from solid center back belting hides and are assembled with steel copper-plated rivets. They are made endless with machine screws and nuts and can be readily lengthened, shortened or adjusted without special tools.

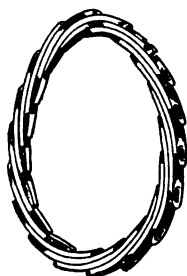
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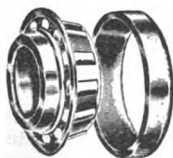
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CHICAGO ILLINOIS
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BENDERS, Angle*(Hand Power)*

Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill. "X L C R."
 Hinman & Co., D. A., Sandwich, Ill.
 Wallace Supplies Mfg. Co., 420 Orleans St., Chicago, Ill.
 X L C R—See Excelsior Tool & Machine Co.

BENDING MACHINES—See Machines, Wood Bending

BENDINGS, Wood*(For Best Books; for Metal Best Books—See Books, Metal Best)*

Campbell & Dann Mfg. Co., Tullahoma, Tenn.
 Dann Bros. & Co., 34 Franklin St., New Haven, Conn.
 Shepard & Sons, H. G., James & River Sts., New Haven, Conn.
 Stoll Bros., 545-47 N. Market St., Lancaster, Pa.

BERTHS, CAR—See Beds or Berths, Car

BEVEL GEARS FOR FORDS—See Gears, Special Ratio

BILLIKENS, RADIATOR—See Ornaments, Radiator

BILLING SYSTEMS—See Books, Accounting

BINDERS, LOOSE LEAF—See Books, Accounting and Cost System

BINDING, Mat and Carpet*(Metal Binding for Carpet, Linoleum or Rubber Mats)*

Douglas & Lomason Co., 5336 Lincoln Ave., Detroit, Mich.

BINDINGS, Upholstery

Backstay Machine & Leather Co., Oak & Howard Sts., Union City, Ind.

Bauer Bros. Mfg. Co., 1035-37 Richmond St., Cincinnati, O.

Boulevard—See Woodward & Cochey.

Carter Co., George R., Connersville, Ind.

Cincinnati Welt Co., 113 Opera Pl., Cincinnati, O.

Detroit Narrow Fabric Co., 46 Lafayette St., E., Detroit, Mich.

Edwards Mfg. Co., 1339 Clinton Ave., Detroit, Mich.

Hamilton-Wade Co., 53 Haverhill St., Brockton, Mass.

Jansen Mfg. Co., 14th Ave. & Howard St., Detroit, Mich.

Kerr Specialty Co., 12th St. & G. T. R. R., Detroit, Mich.

Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)

Ten Eick, Cornelia, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)

United Stay Co., Kendall Sq., Cambridge, Mass.

Woodward & Cochey, 550 Broad St., Lynn, Mass. "Boulevard." (See page 123.)

BINS, SHOP—See Racks, Metal Tool

BITS, BATTERY STRAP—See Drills and Bits, Battery Strap

BLADES, Hack Saw*(For Hack Saw Frames—See Frames, Hack Saw)*

A. A. A.—See Atkins & Co.

Arrow Head—See Jennings & Co.

Atkins & Co., E. C., 402 S. Illinois St., Indianapolis, Ind. "A. A. A."

Blanche Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blanche Twist Drill & Tool Co., Taunton, Mass.)

Blanche Twist Drill & Tool Co.—See Blanche Co.

Boston Saw & Tool Co., 324 Harrison Ave., Boston, Mass. "Knoxall."

Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.

Diamond Saw & Stamping Works, 357-61 Seventh St., Buffalo, N. Y. "Sterling."

Eureka—See Thompson & Son Co.

Goodell-Pratt Co., Greenfield, Mass.

Griffin Co., G. W., Franklin, N. H.

Jennings & Co., C. E., 71-73 Murray St., New York, N. Y. "Arrow Head."

Knoxall—See Boston Saw & Tool Co.

Millers Falls Co., Millers Falls, Mass.

Milford—See Thompson & Son Co.

Napier Saw Works, Myrick Bldg., Springfield, Mass.

Peerless Machine Co., 1615 Racine St., Racine, Wis.

Racine Tool & Machine Co., 1439 Junction Ave., Racine, Wis.

Red Devil—See Smith & Hemenway.

Simonds Mfg. Co., 470 Main St., Fitchburg, Mass.

Simplex Tool & Supply Co., 127 Oliver St., Boston, Mass.

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

Stapf & Co., John B., Dunkirk, N. Y.

Starrett Co., L. S., Athol, Mass.

Sterling—See Diamond Saw & Stamping Works.

T.T.—See Thompson & Son Co.

Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Milford," "Eureka," "XL," "T.T."

Utility—See West Haven Mfg. Co.

Victor Saw Works, 1 Rowland Ave., Springfield, Mass.

West Haven Mfg. Co., 32 Elm St. (West Haven), New Haven, Conn. "Utility."

XL—See Thompson & Son Co.

BLANKS, GEAR—See Gears, Blank

BLOCKS, CAR EXTRACTING—See Winches and Blocks

BLOCKS, CAR SHIPPING—See Chocks, Car Shipping

BLOCKS, CHAIN—See Blocks or Hoists, Chain

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BLOCKS or HOISTS, Chain*(For Portable Cranes—See Cranes, Portable)*

Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill. "Union."
 Chisholm-Moore Mfg. Co., Lakeside Ave. & E. 49th St., Cleveland, O. "Cyclone."
 Cyclone—See Chisholm-Moore Mfg. Co.
 Ford Chain Block & Mfg. Co., Second & Diamond Sts., Philadelphia, Pa. "Tribloc."
 Franklin Portable Crane & Hoist Co., 318 West Park, Franklin, Pa.
 Harrington Son & Co., Edwin, 17th & Callowhill Sts., Philadelphia, Pa. "Peerless."
 Jackson Truck Hoist Co., Belleville, Ill.
 Peerless—See Harrington Son & Co.
 Reading Chain & Block Corp., 2140 Adams St., Reading, Pa.
 Round & Son, D., 7625 Broadway, Cleveland, O. "Simplex," "Superior."
 Simplex—See Round & Son.
 Simplex—See Speidel, J. G.
 Speidel, J. G., W. Buttonwood & Gordon Sts., Reading, Pa. "Simplex."
 Superior—See Round & Son.
 Tribloc—See Ford Chain Block & Mfg. Co.
 Union—See Channon Mfg. Co.
 Wright Mfg. Co., Lisbon, O.
 Yale & Towne Mfg. Co., Stamford, Conn.
 (See page 540.)

BLOCKS, Valve End Squaring*(Hardened steel blocks used to clamp valve stems in vice when filing ends)*

Hinckley-Myers Co., Water St., Jackson, Mich.

BLOW TORCHES—See Torches, Gasoline**BLOWOUT PATCHES—See Sleeves, Tire Repair; also Shoes, Inner Tire****BLUE, Mechanics'***(For use when adjusting bearings)*

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Dutch—See Van Cleef Bros.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco."
 (See page 275.)
 Norwesco—See Northwestern Chemical Co.
 Permatex Co., Inc., Brooklyn, N. Y.
 (See page 277.)
 Rie-Nie—See Durkee-Atwood Co.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

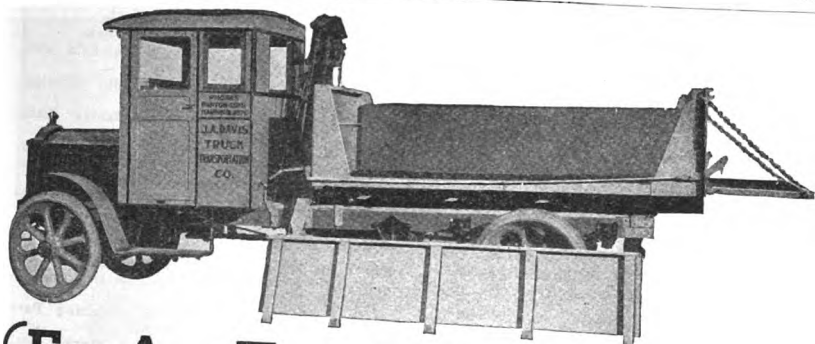
BLUE PRINTING MACHINES — See Machines, Blue Printing**BOARD BRACES FOR FORDS—See Braces, Running Board****BOARDS, COWL, FOR FORDS — See Cows, Dash****BOARDS, DASH—See Dashes, Wood****BOARDS, FLOOR—See Parts, Wood Automobile****BOARDS, FLOOR FOR FORDS—See Boards, Floor or Foot****BOARDS, Floor or Foot for Fords**

Gillette Motor Products Corp., Howard City, Mich.
 Mengel Co., Louisville, Ky.
 Paragon Mfg. Co., Hickory, N. C.

**BOARDS, INSTRUMENT, FOR FORDS—
See Cows, Dash****BOARDS, Running***(Pressed or Stamped Steel, Wood and Linoleum or Rubber Covered Running Boards)*

Bossert Corp., Utica, N. Y.
 Brummeler-Ruggles Metal Products Co., 1215 Ionla Ave., S. W., Grand Rapids, Iowa.
 Builders Mfg. Co., 828-30 N. Wells St., Chicago, Ill. (See page 123.)
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Carter Bloxomend Flooring Co., Long Bldg., Kansas City, Mo.
 Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.
 Cochran Piston Corp., Moffatt Bldg., Detroit, Mich.
 Crosby Co., Buffalo, N. Y. (See page 813.)
 Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.
 Detroit Pressed Steel Co., Detroit, Mich. (See page 943.)
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 Erdie Perforating Co., 171 York St., Rochester, N. Y. (See page 579.)
 Forsyth Bros. Co., Harvey, Ill. (See page 949.)
 Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y.
 Hydraulic Pressed Steel Co., of The Hydraulic Steel Co., Cleveland, O.
 Jonas C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Distributors East of the Mississippi River for Standley Adjustors.) (See page 138B.)
 Lamco—See Lehman Mfg. Co.
 Lawson Co., F. H., Dept. D, Cincinnati, O. (See page 377.)
 Lehman Mfg. Co., 310 Fourth St., Canaan, Ind. "Lamco." (See page 145.)
 Mengel Co., Louisville, Ky.
 Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
 Michigan Stamping Co., 11631 Mack Ave., Ypsilanti, Mich.
 Michigan Truck & Lumber Co., Holly, Mich.
 Moline Pressed Steel Co., Fifth St., East Moline, Ill.
 Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
 Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
 Parish & Bingham Corporation, Cleveland, O. (See page 242.)
 Rochester Pressed Steel Co., 35-37 Ford St., Rochester, N. Y.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."
 Standley Skid Chain Co., Boone, Iowa. (See page 138B.)
 Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill.
 Uniq—See Spiro Mfg. Co.
 Wemsco—See Western Metal Specialty Co.
 Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemsco."

Everything is listed under the NOUN or principal word



For Any Truck—For Any Load

An all-purpose body. Made in five standard types for all power and hand dumping trucks. Steel throughout—removable sides—double acting tail gate. This 1921 Universal Model is one of a complete line of

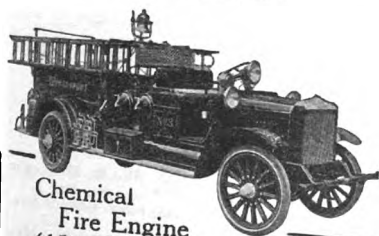
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SPECIAL SIZES AND MODELS BUILT FROM SPECIFICATIONS

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STANDARD STEEL WORKS 1740 Tracy Ave., Kansas City, Mo.

"THE BOYER"



Chemical
Fire Engine
(1 1/2-Ton Truck)

HOSE BODY—

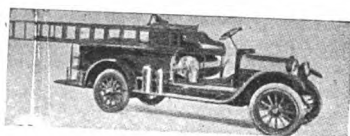
Capacity for 1000 ft., 2 1/2 in.,
Double Jacket water hose.

TANKS—

Two chemical tanks of 35 gal. capacity. One tank recharging while others discharge.

We can build our equipment on any make chassis

The Obenchain-Boyer Co.
Logansport, Ind.
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PIRSCH Fire Truck Bodies

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Bodies of All Types

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Pumping Units

Ladders—Equipments

Write for Bulletins B, C
and D-19

PETER PIRSCH & SONS CO.

KENOSHA, WIS.

Please mention The Automobile Trade Directory

BOARDS, Running, for Fords*(Linooleum, Rubber and Aluminum covered wood boards)*

Hudson Motor Specialties Co., 1924 Arch St., Philadelphia, Pa. "Slip-on."

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D. Cincinnati, O. "Lawco." (See page 377.)

Michigan Truck & Lumber Co., Holly, Mich.

R-E—See Roose Mfg. Co.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."

Slip-on—See Hudson Motor Specialties Co.

Spiro Mfg. Co., C., 68-73 E. 131st St., New York, N. Y. "Uniq."

Uniq—See Spiro Mfg. Co.

BODIES, Automatic Dumping, for Fords

Anthony Co., Streator, Ill. "Rocker." (See page 127.)

Highway Trailer Co., Edgerton, Wis.

Hummel Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for Highway Trailers.) (See page 143.)

Rocker—See Anthony Co.

BODIES, AUTOMOBILE—See Bodies, Metal Automobile; also Bodies, Wood Automobile**BODIES, AUTOMOBILE, FOR FORDS**—See Bodies, Special Passenger**BODIES, COMMERCIAL**—See Bodies, Metal Commercial; also Bodies, Wood Commercial; also Bodies, Special Dumping**BODIES, COMMERCIAL, FOR FORDS**—See Bodies, Special Commercial; also Bodies, Automatic Dumping**BODIES, DUMPING**—See Bodies, Special Dumping**BODIES, DUMPING, FOR FORDS**—See Bodies, Automatic Dumping**BODIES, Metal Automobile***(For Wood Automobile Bodies—See Bodies, Wood Automobile)*

Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.

Abresch Co., Chas., 297 Fourth St., Milwaukee, Wis.

Aircraft Engineering Corp., 517 E. 79th St., New York, N. Y.

American Body Co., 1200 Niagara St., Buffalo, N. Y.

American Motor Body Co., 1800 Lehigh Ave., W., Philadelphia, Pa.

Armstrong Co., M., 428 Chapel St., New Haven, Conn.

Auto Body Co., Lansing, Mich. (See page 127.)

Auto Metal Body Co., 346-52 Collins Ave., Pittsburgh, Pa.

Auto Metal Body Co., 531 Worthington St., Springfield, Mass.

Babcock Co., H. H., Watertown, N. Y.

Baker R. & L. Co., Cleveland, O. "Raulang."

Beaudette Co., O. J., Pontiac, Mich.

Biddle & Smart Co., Amesbury, Mass.

Blue Ribbon Body Co., 1720 Fairfield Ave., Bridgeport, Conn.

Bowe Carriage Co., 711 Orange St., Wilmington, Del.

Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.

Briggs Carriage Co., 11 Cedar St., Amesbury, Mass.

Briggs Mfg. Co., Clay Ave., Detroit, Mich.

Brooks-Ostruk Co., 225 W. 56th St., New York, N. Y.

Brown Body Corp., 3147 Superior Ave. E., Cleveland, O.

Brunn & Co., 980 Ellicott St., Buffalo, N. Y.

Brunn's Carriage Mfg. Co., 1140-48 Main St., Buffalo, N. Y.

Budd Mfg. Co., Edward G., Hunting Park Ave. & 25th St., Philadelphia, Pa.

Caffrey Co., Chas. S., Tenth & Market Sts., Camden, N. J.

Central Mfg. Co., 18th St. & Columbia Ave., Connersville, Ind.

Chauney Body Corp., 2601 Archer Ave., Chicago, Ill. (See page 131.)

Collings Carriage Co., Front & Arch Sts., Camden, N. J.

Collins Vehicle Woodwork Co., R. N., 3906 Chouteau Ave., St. Louis, Mo.

Cooling Carriage Co., 406 French St., Wilmington, Del.

Currier-Cameron Co., Amesbury, Mass.

Cutter, J. Frank, 38 Amherst St., Cambridge, Mass.

Dunbar Automobile Body Co., 40th St. & Lancaster Ave., Philadelphia, Pa.

Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.

Erdman-Guider Co., 2290 Woodward Ave., Detroit, Mich. (See page 127.)

Farnham-Nelson Co., 18-22 Arboretum Rd., Roslindale, Mass.

Fisher Body Corp., Harper & Piquette Sts., Detroit, Mich.

Fitz Gibbon & Crisp, Calhoun St. & P. & R. R., Trenton, N. J.

Fleetwood Metal Body Co., Fleetwood, Pa.

Graff Mfg. Co., 2919 Indiana Ave., Chicago, Ill.

Griswold Motor & Body Co., 5338 Commonwealth Ave., Detroit, Mich.

Hayes-Ionia Co., Seventh St. & Muskegon Ave., Grand Rapids, Mich.

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Hayes & Miller Co., 518-22 E. 57th St., New York, N. Y.

Healey & Co., Broadway & 51st St., New York, N. Y.

Holbrook Co., Hudson, N. Y.

Holcker Mfg. Co., 16th & McGee Sts., Kansas City, Mo.

Hollander & Morrill, Amesbury, Mass.

Hudson Auto Body Corp., 507-09 W. 35th St., New York, N. Y.

Jenkins Co., J. B., Merrimac, Mass.

Kimball & Co., C. P., 3900 S. Michigan Ave., Chicago, Ill.

Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y.

Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.

Lang Body Co., Cleveland, O.

Lee Coach & Body Works, Don, 12th & Main Sts., Los Angeles, Calif.

Limousine-Carriage Mfg. Co., 3515 Michigan Ave., Chicago, Ill.

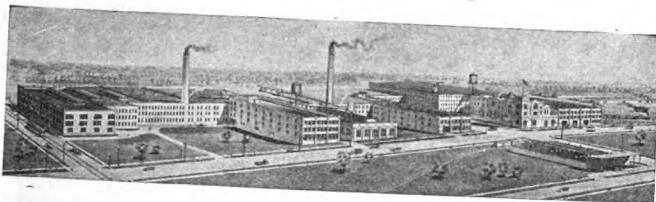
Lind—See Ohio Body & Blower Co.

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LANSING, MICHIGAN

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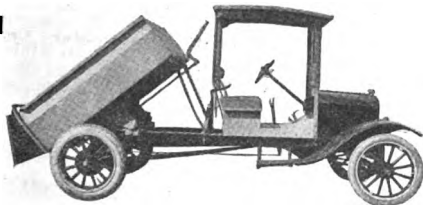
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Also
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Builders of High Grade

CLOSED AUTOMOBILE BODIES

We have recently acquired an additional up-to-date plant, containing over 300,000 square feet of floor space, at Saginaw, Mich., where we are equipped to build closed bodies in quantities.

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SAGINAW, MICH.

Main Office: 2290 Woodward Ave., DETROIT, MICH.

Please mention The Automobile Trade Directory

BODIES, Metal Automobile (Continued)

Locke & Co., 437-53 E. 56th St., New York, N. Y.
 Longdin-Brugger Co., Second & Macy Sts., Fond du Lac, Wis.
 Lowry Top & Body Co., Gaul & Adams Sts., Philadelphia, Pa.
 Macinnis Bros., 120-22 23d St., Toledo, O.
 Martin Metal Mfg. Co., Wichita, Kans.
 Martin Truck & Body Corp., W. Market St. & Highland Ave., York, Pa.
 Milburn Wagon Co., 3134 Monroe St., Toledo, O.
 Miller, Hicks & Hewitt, 509-15 W. 56th St., New York, N. Y.
 Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
 Moline Body Corp., 2430 Third Ave., Moline, Ill.
 Morton & Brett, 811-15 E. 23rd St., Indianapolis, Ind.
 Mullins Body Corp., 182 Franklin Ave., Salem, O.
 New Haven Carriage Co., New Haven, Conn. (See page 131.)
 New Star Auto Metal Works, 1718 S. Wabash Ave., Chicago, Ill. (See page 131.)
 Niagara Motor Boat Co., 175 Sweeney St., North Tonawanda, N. Y.
 Ohio Body & Blower Co., 9205 Detroit Ave., Cleveland, O. "Lind."
 Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
 Pontiac Body Co., Pontiac, Mich.
 Portland Body Works, Portland, Ind.
 Pullar Co., James & Mechanic St., Hartford, Conn.
 Racine Mfg. Co., Sixth & Meade Sts., Racine, Wis.
 Raulang—See Baker R. & L. Co.
 Reiss Body Co., 3029 Baker St., Detroit, Mich.
 Robbins Body Corp., Indianapolis, Ind. (See page 131.)
 Royal Motor Body Co., 211-15 W. 19th St., New York, N. Y.
 Rubay Co., 1818-28 W. 78th St., Cleveland, O.
 Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.
 Seaman Co., W. S., 486 Virginia St., Milwaukee, Wis.
 Sidney Mfg. Co., Sidney, O.
 Smith-Springfield Body Corp., Circuit Ave. (West Springfield), Springfield, Mass.
 Springfield Coach Works, Springfield, Mass.
 Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
 Standard Auto Radiator Co., 244 W. 53rd St., New York, N. Y.
 Stewart Co., W. F., 1023 Harriet St., Flint, Mich.
 Stockbridge Body Co., 180 Union St., Springfield, Mass.
 Thompson Co., E. J., Lexington Ave. & Thomas Blvd., Pittsburgh, Pa.
 Union City Body Co., Union City, Ind.
 Walker Body Co., Amesbury, Mass.
 Walker Carriage Co., Merrimac, Mass.
 Weatherproof Body Corp., Corunna, Mich. (See page 185.)
 Widman & Co., J. C., 1143 14th Ave., Detroit, Mich.
 Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
 Wilson Body Co., C. R., 1660 Clay Ave., Detroit, Mich.
 York Body Corp., Linden & Belvidere Aves., York, Pa.

BODIES, Metal Commercial Car

For Wood Commercial Bodies—See Bodies, Wood Commercial; for Dumping Bodies—See Bodies, Special Dumping)

Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.
 Acme Wagon Co., Emigsville, Pa.
 Albert Bros., 11-13 Cannon St., New York, N. Y.
 American Body Co., 1200 Niagara St., Buffalo, N. Y.
 Armstrong-Johnston Mfg. Co., W. First Ave. & Perry St., Columbus, O.
 Auburn Wagon Co., 528 W. Race St., Martinsburg, W. Va. "20th Century."
 Auglaize Holst & Body Co., New Bremen, O.
 Auto Body Co., Lansing, Mich. (See page 127.)
 Babcock Co., H. H., Watertown, N. Y.
 Bee Automobile Co., 15-21 N. Church St., Allentown, Pa.
 Blehls Wagon & Auto Body Works, 31 S. Fifth St., Reading, Pa.
 Bowe Carriage Co., 711 Orange St., Wilmington, Del.
 Brown Body Corp., 3147 Superior Ave. E., Cleveland, O.
 Bruder, Lawrence, 211-13 W Second St., Cincinnati, O.
 Budd Mfg. Co., Edward G., Hunting Park Ave. & 25th St., Philadelphia, Pa.
 Carll's Sons, Chas. W., Coles St., Trenton, N. J.
 Collings Carriage Co., Front & Arch Sts., Camden, N. J.
 Columbian Steel Tank Co., 1510-1025 W. 12th St., Kansas City, Mo. (See page 849.)
 Continental Trailer Corp., 3625 Superior St., Detroit, Mich.
 Cooling Carriage Co., 406 French St., Wilmington, Del.
 Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.
 Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.
 Erdman-Guider Co., 2290 Woodward Ave., Detroit, Mich. (See page 127.)
 Field Body Corp., Owosso, Mich.
 Forsyth Bros. Co., Harvey, Ill. (See page 940.)
 Gilhool Body Works, Washington & Walnut Sts., Scranton, Pa.
 Hanger Co., C. F., 2046 E. 71st St., Cleveland, O.
 Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.
 Harrison Co., Robert, 224-28 W. First St. (S Boston), Boston, Mass.
 Hayes-Ionia Co., Seventh St. & Muskegon Ave., Grand Rapids, Mich.
 Heil Co., 1130-40 Montana Ave., Milwaukee, Wis. (See page 459.)
 Hendrick Mfg. Co., 39-75 Dundaff St., Carbondale, Pa.
 Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.
 Hopkins Mfg. Co. of N. Y., Hanover, Pa.
 Hummel Mfg. Co., 3014 La Salle St., St. Louis, Mo. (See page 143.)
 Hydraulic Holst Mfg. Co., 292 Walnut St., St. Paul, Minn. "Superior."
 Interboro Holst & Body Corp., Ely, William & Henry Sts., Long Island City, N. Y.
 Johnston Commercial Body Co., Fort Smith, Ark.
 K-L—See Kingsbury-Leahy Co.
 K. & J.—See Kilbourne & Jacobs Mfg. Co.
 Kilbourne & Jacobs Mfg. Co., Columbus, O. "K. & J."

Everything is listed under the NOUN or principal word

BODIES, Metal Commercial Car
(Continued)

Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y. "K-L."
 Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
 Lang Body Co., Cleveland, O.
 Lee Trailer & Body Co., 2333 S. LaSalle St., Chicago, Ill. (See page 897.)
 Longdin-Brugger Co., Second & Macy Sts., Fond-du-Lac, Wis.
 McDermott Body Corp., 123-25 Sixth St., Long Island City, N. Y.
 McFarlane & Co., H., 526-38 S. Canal St., Chicago, Ill.
 Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.
 Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.
 Marx, Geo. B., 192-206 Newell St., Brooklyn, N. Y.
 Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.
 Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
 Moline Plow Co. (Stephens Motor Works), Moline, Ill.
 National Steel Products Co., 1611-21 Crystal Ave., Kansas City, Mo.
 New Haven Carriage Co., New Haven, Conn. (See page 131.)
 Niagara Motor Boat Co., 175 Sweeney St., North Tonawanda, N. Y.
 Niles Car & Mfg. Co., Erie St., Niles, O.
 Olsen Auto Body & Wagon Works, 901-11 W. North Ave., Chicago, Ill.
 Pehl Body Co., Tenth & Euclid Sts., Kansas City, Mo.
 Peters Auto Body & Spring Works, 418-20 Enoch St., Baltimore, Md.
 Pirach & Sons Co., Peter, Kenosha, Wis. (See page 125.)
 Press' Sons, Jacob, 501 W. 33d St., Chicago, Ill.
 Providence Body Co., 128 Narragansett St., Providence, R. I.
 Schutte Body Co., Charles, 137 E. Marlon St., Lancaster, Pa.
 Sidney Mfg. Co., Sidney, O.
 Slor & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.
 Standard Commercial Body Corp., 423-31 E. 104th St., New York, N. Y.
 Stockbridge Body Co., 130 Union St., Springfield, Mass.
 Stover Steel Tank & Mfg. Co., Hancock Ave., Freeport, Ill.
 Superior—See Hydraulic Hoist Mfg. Co.
 Thompson, N. W., 10 Scotia St., Boston, Mass. (New England Distributors for Field Bodies.) (See page 161.)
 Troy Body Co., Crawford St. & Big Four Ry., Troy, O.
 Truck Engineering Co., 7961 Broadway Cleveland, O.
 20th Century—See Auburn Wagon Co.
 Universal Body Co., Chicago St., Jonesville, Mich.
 Waterbury Body Co., Thomaston, Conn.
 Whitman Agricultural Co., St. Louis, Mo.
 Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
 Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
 Wright Co., Thomas, 71-78 Colden St., Jersey City, N. J.
 York Body Corp., Linden & Belvidere Aves., York, Pa.
 York Carriage Co., Franklin & Hay Sts., York, Pa.

BODIES, TRUCK—See Bodies, Metal Commercial; also Bodies, Wood Commercial; also Bodies, Special Dumping

BODIES, TRUCK, FOR FORDS—See Bodies, Special Commercial; also Bodies, Automatic Dumping

BODIES, Wood Automobile

(For Metal Automobile Bodies—See Bodies, Metal Automobiles)

Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.
 Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.
 American Body Co., 1200 Niagara St., Buffalo, N. Y.
 Amesbury Body Co., Carriage Ave., Amesbury, Mass.
 Anchor Top & Body Co., 2000 South St., Cincinnati, O.
 Armstrong Co., M., 438 Chapel St., New Haven, Conn.
 Armstrong-Johnston Mfg. Co., W. First Ave. & Perry St., Columbus, O.
 Auto Body Co., Lansing, Mich. (See page 127.)
 Auto Metal Body Co., 531 Worthington St., Springfield, Mass.
 Auto Truck Steel Body Co., 3028-46 Carroll Ave., Chicago, Ill.
 Badger Auto Body Co., 309-13 Hanover St., Milwaukee, Wis.
 Baker R. & L. Co., Cleveland, O. "Raulang."
 Bela Body Co., Clark St., Amesbury, Mass.
 Blue Ribbon Body Co., 1720 Fairfield Ave., Bridgeport, Conn.
 Blue Strak—See Izett Auto Body & Repair Shop.
 Bowe Carriage Co., 711 Orange St., Wilmington, Del.
 Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.
 Bridgeport Body Co., 363 Fairfield Ave., Bridgeport, Conn.
 Bridgeton Hearse & Ambulance Co., Jefferson St., Bridgeton, N. J.
 Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.
 Brown Body Corp., 3147 Superior Ave. E., Cleveland, O.
 Brownell & Burt, 10 Washington St., Taunton, Mass.
 Brunn & Co., 980 Ellicott St., Buffalo, N. Y.
 Brunns' Carriage Mfg. Co., 1140-42 Main St., Buffalo, N. Y.
 Bub Body Corp., 338 S. Water St., Milwaukee, Wis.
 Calumet Truck Body Corp., Calumet, Mich.
 Central Auto Body Co., 15 Orchard St., Hartford, Conn.
 Chauncy Body Corp., 2601 Archer Ave., Chicago, Ill. (See page 131.)
 Chicago Coach & Carriage Co., 1223-31 S. Michigan Ave., Chicago, Ill.
 Cincinnati Auto Body Co., 1938-48 W. Eighth St., Cincinnati, O.
 Clarke, Frank J., 417 Third Ave., Brooklyn, N. Y.
 Collings Carriage Co., Front & Arch Sts., Camden, N. J.
 Collins Vehicle Woodwork Co., R. N., 3900 Chouteau Ave., St. Louis, Mo.
 Continental Auto Top Mfg. Co., 3908 Washington Ave., St. Louis, Mo.
 Cooling Carriage Co., 406 French St., Wilmington, Del.

Everything is listed under the NOUN or principal word

BODIES, Wood Automobile (Continued)

- Copp Co., George W., 206-14 14th St., Long Island City, N. Y. (Eastern Distributors for Anchor Bodies.) (See page 123.)
- Currier-Cameron Co., 35 Elm St., Amesbury, Mass.
- Dann Bros. & Co., 34 Franklin St., New Haven, Conn.
- Dunbar Automobile Body Co., 40th St. & Lancaster Ave., Philadelphia, Pa.
- Earl Motors, Leroy & Horton Sts., Jackson, Mich.
- Erby & Sons Co., Wm. 121-27 W. Grand Ave., Chicago, Ill.
- Erdman-Gulder Co., 2290 Woodward Ave., Detroit, Mich. (See page 127.)
- Farnham-Nelson Co., 18-23 Arboretum Rd., Roslindale, Mass.
- Fehring Carriage Co., 601-09 Third St., Columbus, Ind.
- Fitz Gibbon & Crisp, Calhoun St. & P. & R. R. R., Trenton, N. J.
- Flagler Co., 159 Carlton Ave., Brooklyn, N. Y.
- General Body Co., Bemidji, Minn.
- Globe Body Co., Union & Sycamore Sts., Fostoria, O.
- Gregg—Wm. D. Rogers Co., 1926 Arch St., Philadelphia, Pa.
- H. & M. Body Corp., 608 Center St., Racine, Wis.
- Harvey Top & Body Co., 918-20 Main St., Buffalo, N. Y.
- Hayes & Miller Co., 518-22 E. 57th St., New York, N. Y.
- Healey & Co., Broadway & 51st St., New York, N. Y.
- Henney & Co., John W., Louis Ave. & Jackson St., Freeport, Ill.
- Hercules Corp., Morton Ave., Evansville, Ind. "McCurdy."
- Holcker Mfg. Co., 16th & McGee Sts., Kansas City, Mo.
- Hudson Auto Body Corp., 507-09 W. 35th St., New York, N. Y.
- Hughey & Son, Wm. J., 2518-20 Michigan Ave., Chicago, Ill.
- Issett Auto Body & Repair Shop, 1432-60 Speer Blvd., Denver, Colo. "Blue Streak."
- Jones & Pimm Co., 422 W. Onondaga St., Syracuse, N. Y.
- Kimball & Co., C. P., 3900 S. Michigan Ave., Chicago, Ill.
- Kingsbury-Leahy Co., 125 Hudson Ave., Albany, N. Y.
- Kratzer Carriage Co., 100 S. First St., Des Moines, Iowa.
- Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
- Lang Body Co., Cleveland, O.
- Lee Coach & Body Works, Don, 12th & Main Sts., Los Angeles, Cal.
- Ligonier Auto Body Co., 65-68 Water St., Ligonier, Ind.
- Limousine-Carriage Mfg. Co., 3515 Michigan Ave., Chicago, Ill.
- Limousine Top Co., 1900 Factory St., Kalamazoo, Mich.
- Lincoln Body Co., St. George & Jackson Aves., Rahway, N. J.
- Locke & Co., 437-53 E. 56th St., New York, N. Y.
- Mac Innis Bros., 120-22 22d St., Toledo, O.
- McCurdy—See Hercules Corp.
- McNear, George W., Cambria St., Boston, Mass.
- Mann-Aldrich Carriage Co., 1300 Lincoln St., Denver, Colo.
- Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.
- Michigan Hearse & Motor Co., Grand Rapids, Mich.
- Miller & Co., A. J., Bellefontaine, O.
- Millsbaugh & Irish, S. La Salle St. & English Ave., Indianapolis, Ind.
- Model Body Corp., 2261 Bellevue Ave., Detroit, Mich.
- Moline Body Corp., 2430 Third Ave., Moline, Ill.
- New Haven Carriage Co., New Haven, Conn. (See page 131.)
- Novelty Carriage Works, 813 Second Ave., Spokane, Wash.
- Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
- Racine Mfg. Co., Sixth & Meade Sts., Racine, Wis.
- Raulang—See Baker R. & L. Co.
- Rech-Marbaker Co., Eighth St. & Girard Ave., Philadelphia, Pa.
- Reiss Body Co., 3029 Baker St., Detroit, Mich.
- Robbins Body Corp., Indianapolis, Ind. (See page 131.)
- Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky.
- St. Louis Car Co., 3000 N. Broadway, St. Louis, Mo.
- Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.
- Scott Automobile Body Co., E 18th Ave. & Washington St., Denver, Colo.
- Seaman Co., W. S., 486-90 Virginia St., Milwaukee, Wis.
- Sedan Body Co., N. Pearl St., Union City, Ind.
- Shields Carriage Co., 11 Carriage Ave., Amesbury, Mass.
- Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.
- Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
- Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa.
- Stockbridge Body Co., 130 Union St., Springfield, Mass.
- Stone & Sons, C., 1655-74 Ogden Ave., Chicago, Ill.
- Streator Hearse & Body Co., 910 E. La Rue St., Streator, Ill.
- Terrill Bros., 130 Hamilton St., Rahway, N. J.
- Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal.
- Turnbull Motor Truck & Wagon Co., DeLance, O.
- Union City Body Co., Union City, Ind.
- United Automotive Body Co., Euclid Ave. & 49th St., Cleveland, O.
- Walker Carriage Co., Merrimac, Mass.
- Weatherproof Body Corp., Corunna, Mich. (See page 185.)
- Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
- Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.

BODIES, Wood Commercial Car

(For Metal Commercial Bodies—See Bodies, Metal Commercial; for Dumping Bodies—See Bodies, Special Dumping)

- Abbott-Downing Truck & Body Co., S. Main St., Concord, N. H.
- Abresch Co., Chas., 397 Fourth St., Milwaukee, Wis.
- Acme Wagon Co., Emigsville, Pa.
- Albert Bros., 11-13 Cannon St., New York, N. Y.
- Albright Co., S. S., 13th & U. Sts., Sacramento, Cal.
- American Body Co., 1200 Niagara St., Buffalo, N. Y.

Everything is listed under the NOUN or principal word

BODIES

We have specialized in the building of high grade
Taxicab bodies for well known makes of chassis.
Correspondence invited with dealers who are furnishing chassis for Taxicabs.

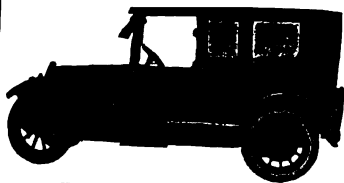
CHAUNCY BODY CORPORATION

2601 ARCHER AVENUE

CHICAGO, ILLINOIS

NEW HAVEN CARRIAGE CO.

New Haven Conn.



Designers and Builders
of High Grade
Automobile Bodies

ROBBINS BODY CORPORATION INDIANAPOLIS, IND.

Designers and Builders

of

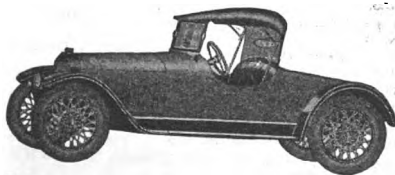
Closed Passenger Automobile Bodies,
Sedans, Coupes, Limousines and Taxi
Cabs.

We have one of the largest and
most modernly equipped body fac-
tories in the country—an old
and competent organization with
twelve years' experience, having
always specialized on closed
bodies. We are thoroughly
equipped to solve your problems
and furnish you good designs and
good bodies. Communicate with
us before ordering elsewhere.

NEW STAR TURTLE BACK

A Real Snappy Sport Model for Fords.
A stylish, sturdy and massive body beau-
tifully designed. Comfortable and easy
riding seat.

Write for terms to the trade.



NEW STAR AUTO METAL WORKS
1718 S. Wabash Avenue

CHICAGO

Please mention The Automobile Trade Directory

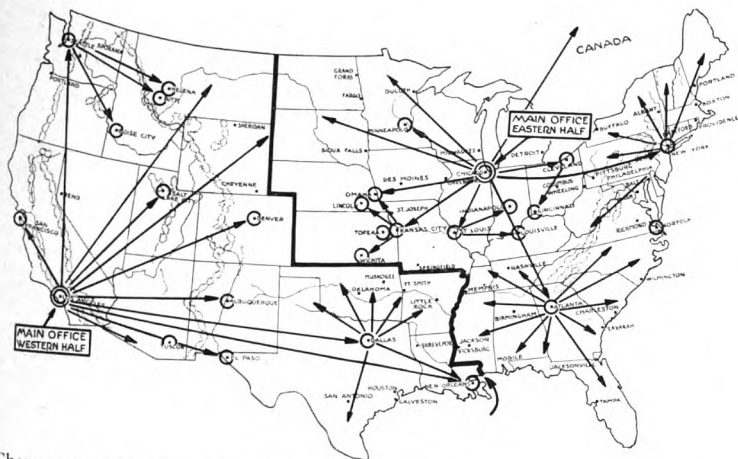
BODIES, Wood Commercial Car (Continued)

- American Body Co., 2802 Williams St., Dallas, Tex. "3 in 1."
- Anderson Motor Co., Rock Hill, S. C.
- Arcadia Trailer Corp., 21 Murray St., Newark, N. Y.
- Armstrong-Johnston Mfg. Co., W. First Ave. & Perry St., Columbus, O.
- Auto Body Co., Lansing, Mich.
(See page 127.)
- Auto Body Works, Pierce Ave. & Eighth St., Appleton, Wis.
- Babcock Co., H. H., Watertown, N. Y.
- Badger Auto Body Co., 309-13 Hanover St., Milwaukee, Wis.
- Badger Mfg. Co., Eighth & M Sts., (Havelock) Lincoln, Nebr.
- Baker R. & L. Co., Cleveland, O. "Raulang."
- Bailey Mfg. Co., North Wales, Pa.
- Bailey & Bowne, Lafayette & Wiley Sts., Utica, N. Y.
- Baldwin & Son, D. W., 131 Post St., New Haven, Conn.
- Barnett Auto Body Co., 430 Golden Gate Ave., San Francisco, Calif.
- Bay City Auto Body Co., Center Ave. & Pere Marquette R. R., Bay City, Mich.
- Bennett-Sustich Co., 1716 W. Lafayette Ave., Detroit, Mich.
- Biehls Wagon & Auto Body Works, 31 S. Fifth St., Reading, Pa.
- Blue Ribbon Body Co., 1720 Fairfield Ave., Bridgeport, Conn.
- Bowe Carriage Co., 711 Orange St., Wilmington, Del.
- Bridgeport Body Co., 363 Fairfield Ave., Bridgeport, Conn.
- Bridgeton Hearse & Ambulance Co., Jefferson St., Bridgeton, N. J.
- Brill Co., J. G., 62nd St. & Woodland Ave., Philadelphia, Pa.
- Brooklyn Commercial Body Co., 470-74 Clermont Ave., Brooklyn, N. Y.
- Brown Body Corp., 3147 Superior Ave. E., Cleveland, O.
- Brownell & Burt, 16 Washington St., Taunton, Mass.
- Bruder, Lawrence, 211-13 W. Second St., Cincinnati, O.
- Calumet Truck Body Corp., Calumet, Mich.
- Cantrell & Co., J. T., Wall St., Huntington, N. Y.
- Central Auto Body Co., 15 Orchard St., Hartford, Conn.
- Chamption Wagon Co., Owego, N. Y.
- Charlotte Wagon & Auto Co., Mint & Bland Sts., Charlotte, N. C.
- Clark Mfg. Co., J. L., 519 High St., Oshkosh, Wis.
- Clarke, Frank J., 417 Third Ave., Brooklyn, N. Y.
- Collings Carriage Co., Front & Arch Sts., Camden, N. J.
- Columbia Wagon Co., Columbia, Pa.
- Columbus Body Co., Columbus, O.
- Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
- Cooling Carriage Co., 406 French St., Wilmington, Del.
- Cope Co., 1082-84 Clinton Ave., Irvington, N. J.
- Crane & Breed Mfg. Co., 1227 W. Eighth St., Cincinnati, O.
- Currier-Cameron Co., 35 Elm St., Amesbury, Mass.
- Dann Bros. & Co., 84 Franklin St., New Haven, Conn.
- Davenport Body Co., 1507 Rockingham Rd., Davenport, Ia.
- Diamond Body Co., Philadelphia, Pa.
- Donegan Auto Body & Specialty Co., 339 Trumbull St., Hartford, Conn.
- Donigan & Nielson, 743-47 Third Ave., Brooklyn, N. Y.
- Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
- Earl Motors, Leroy & Horton Sts., Jackson, Mich.
- Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.
- Erby & Sons Co., Wm., 121-27 W. Grand Ave., Chicago, Ill.
- Erdman-Gulder Co., 2290 Woodward Ave., Detroit, Mich. (See page 127.)
- Eureka Co., First St., Rock Falls, Ill.
- Field Body Corp., Owosso, Mich.
- Fitz Gibbon & Crisp, Calhoun St., & P. & R. R., Trenton, N. J.
- Fitz John-Erwin Mfg. Co., Muskegon, Mich.
- Frazier, B. F., 2614 Smallman St., Pittsburgh, Pa.
- Fulton-Walker Co., 20th & Filbert Sts., Philadelphia, Pa.
- Geissel & Sons, A., 485-87 N. Third St., Philadelphia, Pa.
- General Body Co., Bemidji, Minn.
- General Woodwork Co., 1225-35 Budd St., Cincinnati, O.
- Gibbons Body Co., 138 Worcester St., Boston, Mass.
- Gilhoel Body Works, Washington & Walnut Sts., Scranton, Pa.
- Gillette Motor Products Corp., Howard City, Mich.
- Golide, Louis, 1874 W. 22d St., Cleveland, O.
- Graves Co., L. C., Springboro, Pa.
- Great Western Commercial Body Co., Fourth & Pierce Sts., Omaha, Neb.
- Grove City Body & Mfg. Co., 401 Erie Ave., Grove City, Pa.
- H. & M. Body Corp., 608 Center St., Racine, Wis.
- Huber & Co., Boston St. and C. H. & D. Ry., Cincinnati, O.
- Hanger Co., C. F., 2046 E. 71st St., Cleveland, O.
- Hanover Bending & Mfg. Co., Factory St., Hanover, Pa.
- Harrison Co., Robert, 324-38 W. First St. (S Boston), Boston, Mass.
- Henney Co., John W., Louis Ave. & Jackson St., Freeport, Ill.
- Hesse Mfg. Co., Leavenworth, Kans.
(See page 895.)
- Hi-Grade-See Commercial Auto Body Co.
- Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.
- Holcker Mfg. Co., 16th & McGee Sts., Kansas City, Mo.
- Hoover Wagon Co., York, Pa.
- Hopkins Mfg. Co. of N. Y., Hanover, Pa.
- Interboro Holst & Body Corp., Ely, William & Henry Sts., Long Island City, N. Y.
- Izett Auto Body & Repair Shop, 1432-60 Speer Blvd., Denver, Colo. "Perfection," "Nonxl."
- Jewett Co., Geo. H., 172-74 Shrewsbury St., Worcester, Mass.
- Joynt & Sons, R., 4231 Vermont Ave., Detroit, Mich.
- K-L-See Kingsbury-Leahy Co.
- Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y. "K-L."
- Kipp Wagon Co., 222 E. 24th St., New York, N. Y.

Everything is listed under the NOUN or principal word

C. N. & F. W. JONAS

"A national selling organization to all the jobbing divisions of the automotive industry"



There are two complete units of the C. N. & F. W. Jonas organization working in harmonious distribution of products in the Eastern and Western half of the United States and located at CHICAGO AND LOS ANGELES.

THIS company was organized nine years ago on the Pacific Coast and has grown to a mammoth national distributing service, as indicated by the map above.

Our representatives are located in the most advantageous divisions of the United States and are in personal contact with the sources of sales outlet at frequent intervals, and invariably at times when their services to the jobber are most desirable.

This organization is built with but one ideal—"The Highest." There is no detail too small to be measured by it; there is no degree of service too difficult for it to render.

It is founded upon knowledge that the best service to its patrons is obtainable only by the highest type of specialization—and with that knowledge, sales representation is established only with manufacturers whose products, facilities and aims measure up to and are in accord with the ideals laid down as the policy upon which this business is conducted.

The following pages represent a condensed catalog of some of the products distributed and are conveniently located here for your quick reference when buying.

When in the market for products which we distribute, correspond with our nearest sales distribution point as given below. They are ready to serve you quickly.

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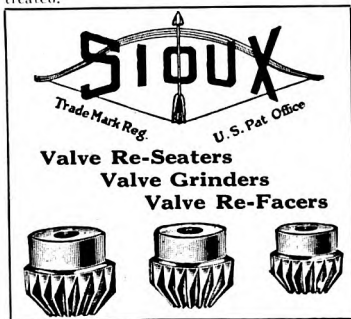
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Complete Line of Replacement Pistons

We can furnish pistons in either large or small quantities for replacement purposes in all types of gasoline motors. We have developed a specially fine replacement piston for Ford motors.

Pistons Pins

accurately made and ground to size, of the finest steel obtainable for the purpose. Made of a special high quality material and heat-treated.



**Valve Re-Seaters
Valve Grinders
Valve Re-Facers**

Wiring Sets for Fords

We have a complete line of Ford Ignition Looms. These wiring assemblies will outlast any other on the market.

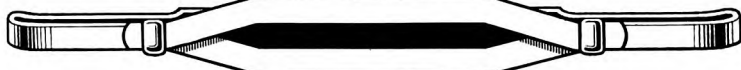
"Red Cap" Horn Button

**For Ford,
Dodge, Chevrolet and
Maxwell**



Red Cap Horn Button for Ford, Dodge and Maxwell Cars. Replace the nut in the center of steering wheel. Assures the greatest degree of safety and convenience.

"Wolverine Duplex" Spring Bar Bumper



The Wolverine Duplex Bumper is manufactured of highest grade spring steel that can be procured. All fittings are made of heavy stampings of the finest grade cold rolled steel, which will stand any shock and is much stronger than any kind of casting. It is fitted on the spring bolt, which is the only correct way to install a bumper, but without the necessity of removing the spring bolt or cutting rivets from the frame. Write for prices. Manufactured under license from the American Chain Company.

Blackhawk Wrenches



Special Universal Wrench for Ford fourth connecting rod. Complete Line of Socket Wrenches. Also Wire Handle Wrenches and Rim Wrenches.

A line of wrenches unusual for its completeness and excellence of manufacture. Standard Combination Sets and individual wrenches for every purpose. Sockets are machined and turned from the solid steel bar properly heat-treated and butt welded to shank, preventing sockets from becoming loose. Manufactured in a high grade black, rust-proof finish. Blackhawk Tools are fully guaranteed.

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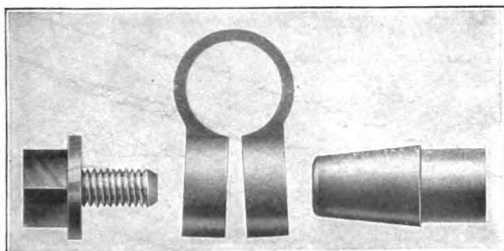
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WHITAKER Battery Equipment and Supplies

**Whitaker
Rental
Connector**



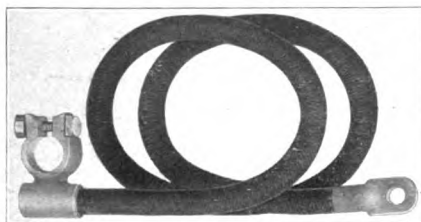
Made of
BRASS
and
Lead
Coated

Brass Terminal Screw
(Lead Coated)



$\frac{3}{8}$ x 1 in.
No. 2. Each 15c

Replacement Cable for FORD



Taper Terminals
(Lead Coated)

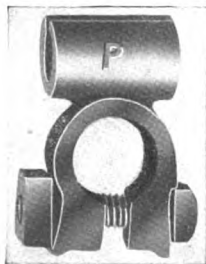


No. 7. Negative
Each 40c

Straight Terminal



No. 10—Pos., each.....60c
No. 12—Neg., each.....60c



Same as 85 and 90, except split.
No. 86.—Pos., each.....50c
No. 91—Neg., each.....50c

Willard Type Terminal



No. 15 fits Positive or Negative Straight Post $\frac{3}{4}$ " to $1\frac{1}{8}$ "
Each 60c

WHITAKER BATTERY & SUPPLY CO.

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209 EAST 20TH STREET

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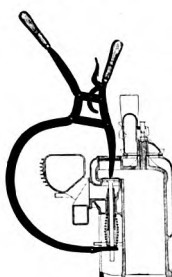
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MAPSON'S "PERFECTION" VALVE LIFTER



**Makes a Friend
for Life of
every Mechanic who
gives it a test**

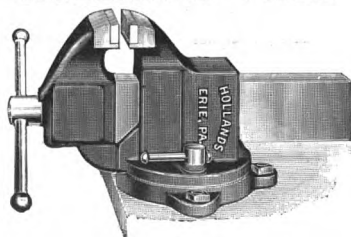
Quick, positive, effortless action. Overhead manifolds, dashes and piping do not interfere. Imposes no side strain on valve stem. Adjustable jaws fit all sizes of spring retainers.

Standard model, \$7.50
Heavy Duty model, \$9.00

Mack Truck model, \$12.00
Special Models on Order

PORTER, INCORPORATED
San Diego, California

"HOLLANDS" VISES



Holland's Vises—for strength, durability and firm gripping power are superior to all other makes, and every tool bearing the Holland's name is **fully guaranteed**.

Manufactured of a high-grade composition that is especially adapted for the hard service to which vises are subjected and, to doubly insure against possible breakage, all points of most strain are heavily reinforced.

The jaws of our vises are faced with steel made to a special formula, to insure a tough, hard jaw that positively will not chip.

HOLLANDS MFG. CO., Erie, Pa.

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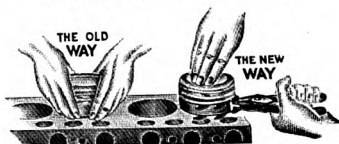
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The VICTORY Piston Ring Compressor

Fills a Long Felt Want in Every Garage



List Price, \$2.00

**Saves Time —
Saves Rings —**
Inserts pistons into either top or bottom of cylinder in ten seconds without danger of ring breakage. Instantaneously adjustable to all size rings from 2 3/4 inches to 9 inches. Used on any type of motor.

DEALERS

**This tool is sold
by all Accessory
Jobbers**

The Victory Ring Compressor Co., Inc.
Grand Rapids, Michigan
Sales Office: 1462 S. Wabash Ave., Chicago



SPECIAL

RATIO GEARS
FOR FORD AND CHEVROLET CARS
Made Right—Fit Right—Work Right

2 3/4 to 1 4 to 1
3 to 1 4.2 to 1



Also <MF> standard ratio gears and pinions for Ford, Chevrolet and Maxwell cars

Prices Right—Immediate Delivery
Manufactured by

Milwaukee Forge & Machine Co.
Milwaukee, Wis.

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CLAYPOOL AXLE SHAFTS FOR REPLACEMENT *For All Makes of Cars*



Each axle has metal tag with stock number of axle, showing which car it is made to fit.

Our axles are made of the highest S. A. E. specifications of which there are three and are guaranteed as such. The code number shown at the extreme left of listing, is stamped on the center of each shaft. Same shafts fit several makes of cars, and this can be determined by the code number.

All shafts are interchangeable, guaranteed to be correct as to size and workmanship and at least the equal of the factory product in every respect. They are accurately machined and ground and subjected to process inspection after each operation, as well as rigid final inspection, then carefully oiled to prevent rusting, and then packed.

Write for Complete List and Trade Price

NEWTON PRODUCTS, OFFICE 528 TRANSPORTATION BLDG., CHICAGO
FACTORY, CLAYPOOL, IND.



AS NECESSARY IN JANUARY AS IN JULY

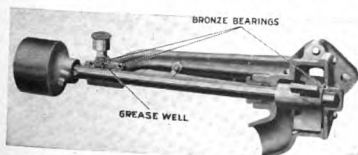
Forced Water circulation prevents freezing in Winter and keeps the motor free from the evils that overheating causes in summer.

Substantially made—steel shaft running in 3 bronze bearings, assuring a water-tight fit.

Ford owners everywhere are realizing the necessity of a

forced water circulation system. The Milwaukee can be installed in 30 minutes' time—no drilling or cutting or changing of hose. Supplied with special Gilmer Fan Belt; models '16 and earlier require a 30" belt; '17 to '20 a 32" belt and model '21 a 34" belt. Unless otherwise specified a 32" belt will be supplied.

List Price, complete, \$12.00 Additional Gilmer Fan Belts, 85c



Order through your jobber or write to nearest office of our sales representatives for information and trade prices

CRAMER MANUFACTURING CO.

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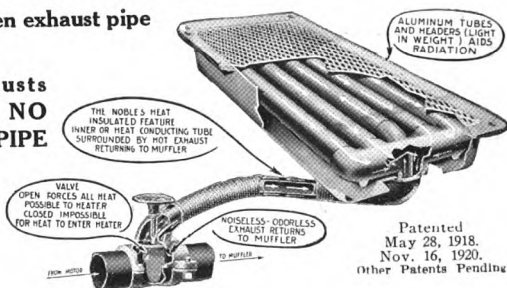
The Noble Auto Heater

"It's Heat Insulated"

No loss of heat between exhaust pipe and heater.

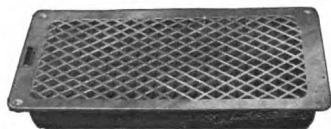
Heater gas exhausts through muffler. NO EXTRA EXHAUST PIPE USED.

HIGHEST EFFICIENCY AT ALL TIMES.

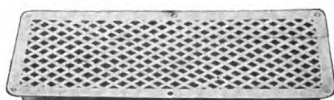


Patented
May 28, 1918.
Nov. 16, 1920.
Other Patents Pending

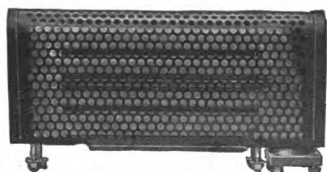
FURNISHED IN THE FOLLOWING TYPES



Style "B," Type "B," $9\frac{1}{2}'' \times 16\frac{1}{2}''$\$30.00
Style "B," Type "BB," $9\frac{1}{2}'' \times 15''$ 30.00
Style "B," Type "DB," $9\frac{1}{2}'' \times 16\frac{1}{2}''$ 45.00
Types DB and DL for Dual Exhaust Motors



Style "B," Type "L," $8\frac{1}{2}'' \times 25\frac{1}{2}''$\$35.00
Style "B," Type "DL," $8\frac{1}{2}'' \times 25\frac{1}{2}''$ 45.00



Style "A," Type "A," $15\frac{1}{4}''$ long.....\$30.00
Style "A," Type "D," $23\frac{1}{4}''$ long..... 32.50
Style "A," Type "DD," $29\frac{1}{4}''$ long..... 35.00



Style "C," Type "C," $18\frac{1}{4}''$ long.....\$35.00
Style "C," Type "E," $25''$ long..... 40.00
Style "C," Type "EE," $30''$ long..... 45.00

Above prices are list and include all necessary fittings and 4 ft. of rack size flexible tubing.

JOBBER—Write for attractive discounts. Comparison will prove the Noble Heater is the best and most efficient obtainable.

Manufactured by
THE NOBLE HEATER COMPANY
Fort Wayne, Ind., U. S. A.

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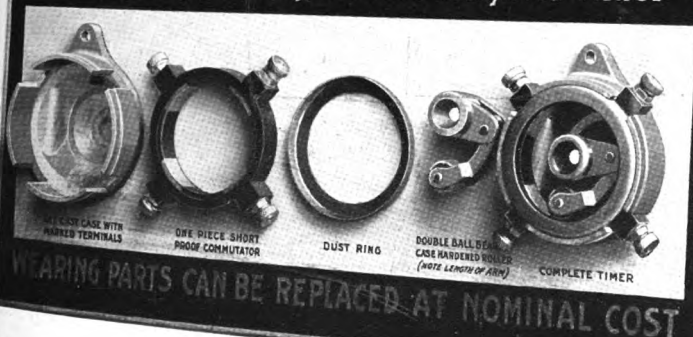
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LIFE-TIMER

HAS NO EQUAL

FOR FORDS AND FORDSON TRACTORS

You never have to buy another complete timer



The Life-Timer has a specially constructed contact ring which is quickly detachable from the timer case complete, enabling the user to renew the timer, after long service, at a minimum cost by replacing it with a new contact ring. This can be done without delay in a few minutes.

The special construction of fibre ring makes contact circuit between the contacts and the timer case impossible because the contacts are independently in this detachable ring, and in no way do they depend upon special insulation to avoid ignition trouble.

The Life-Timer case is heavily made and is worked on the outside for the different colored wires so that should this timer be detached from work about the engine, it can be reassembled

correctly and quickly without tracing out the electric circuits for the proper wire.

The roller bracket arm is made of bronze, which has strength and is machined to accuracy. It carries a specially designed ball bearing roller of large dimension, ground on the surface to obtain the smoothness of action and accuracy.

There is no part of this timer but what is built to an ideal, and from the standpoint of service per year, it can be operated at a much less cost than any other timer at any price which we have seen.

The Life-Timer is adaptable to Ford touring cars, trucks, and tractors. The list price is \$3.50 and the fibre ring may be replaced for \$1.25.

JOBBERS WRITE FOR ATTRACTIVE DISCOUNTS

Manufactured by

**MECHANICAL PRODUCTION COMPANY
MILWAUKEE WISCONSIN**

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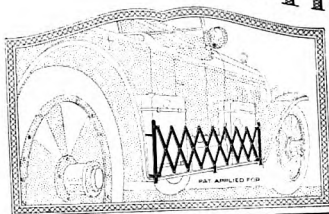
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Western Branches

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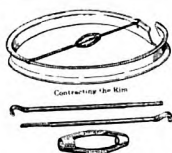
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STANDLEY AUTOMOBILE UTILITIES



STANDLEY Adjustable Luggage Carrier

Carries luggage on the running board, out of passengers' way. Adjustable from 10 to 65 inches. Fits any car. Quickly attached by malleable clamps and lock nuts. No holes to bore. No marks left when detached. Folds up compactly when not in use. Steel construction. Baked black enamel. Weight 15 pounds.



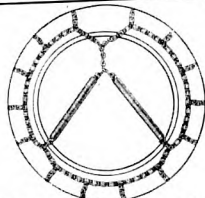
STANDLEY RIM TOOL

For contracting and expanding the rim.
The simplest Rim Tool on the market. Can be operated easily with the hand, enabling one to remove the tire in a moment.
Removes 32, 34 and 36 in. tires.
Upper cut shows rim tool in use, lower cut shows it knocked down for tool kit.
Finished in baked black enamel. Weight, 2 lbs.



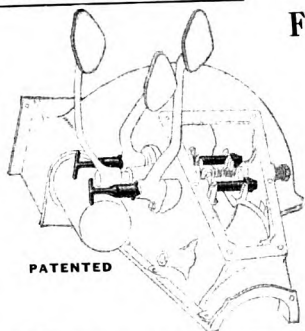
STANDLEY SAFETY TREAD

Prevents slipping on the running board, provides a place to scrape mud and snow from shoes.
Attached with clamps, no tools necessary.
Can be thoroughly cleaned without removing.
Adds to the appearance of the car.
Constructed of steel. Baked black enamel.
Weight, 2½ lbs.



STANDLEY AUTOMATIC CHAIN ADJUSTER

An adjuster for the chains, which works automatically after being installed—it also serves as a fastener. The fasteners being used at the present time can be taken off the chains. Stops rattling and banging of chains.



PATENTED

STANDLEY Ford Transmission Band Adjuster

Loose brakes on Ford cars are at once eliminated by this device. Any Ford owner can tighten his own brakes with the Standley simply by turning the handle. It saves a job, which, by the old way, means a delay of half an hour.

It does away with the severe practice of using the reverse pedal when the brakes become worn. By keeping the brakes in proper adjustment the life of the transmission band is doubled or trebled. The brakes can be adjusted in a few seconds from time to time as they become worn.

No trouble to put in. Can be installed by any Ford owner as quick as it takes to adjust the bands by the old method. No altering of the car, no special tools needed.

Made of cold rolled steel, machined to fit perfectly. The pins are put in under high pressure and cannot drop out. Specially designed lock washers made from the best material. A necessity for every Ford owner. Packed in cartons, two to each set. Weight, 2 lbs. per set.

STANDLEY SKID CHAIN CO., Inc., Boone, Iowa, U. S. A.

C. N. & F. W. JONAS

Western Branches

Dallas
San Francisco
Seattle
Denver

Sales Representatives East of the Mississippi River

GENERAL OFFICE
Western Division
408 Equitable Bank Bldg.
Los Angeles, Cal.

GENERAL OFFICE
Eastern Division
608 S. Dearborn St.
Chicago, Ill.

Eastern Branches

New York City
Minneapolis
London, Ont.
Cleveland
Atlanta
St. Louis
Kansas City, Mo.

**BODIES, Wood Commercial Car
(Continued)**

- Knightstown Buggy Co., Knightstown, Ind.
Koenig & Luhrs Wagon Co., 320 S. Sixth St., Quincy, Ill.
Kratzer Carriage Co., 100 S. First St., Des Moines, Ia.
Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
Lang Body Co., Cleveland, O.
Lange Wagon Co., H., S. St. Clair & Eva Sts., E. E., Pittsburgh, Pa.
Lansing Body Co., 504 North Grand Ave., Lansing, Mich.
Lee Coach & Body Works, Don, 12th & Main Sts., Los Angeles, Calif.
Lee Trailer & Body Co., 2333 S. LaSalle St., Chicago, Ill. (See page 897.)
Leonhardt Wagon Mfg. Co., 413-20 E. Saratoga St., Baltimore, Md.
Lobes Body Co., 17 N. West St., Mt. Vernon, N. Y.
Luedinghaus Quality Motor Trucks, Broadway, Howard to Mound St., St. Louis, Mo.
Lyons & Co., Hugh, Lansing, Mich.
McCardell & Co., J. R., 395 S. Warren St., Trenton, N. J.
McDermott Body Corp., 123-25 Sixth St., Long Island City, N. Y.
McFarlane & Co., 536-38 S. Canal St., Chicago, Ill.
Maremont Mfg. Co., 916-18 S. Wabash Ave., Chicago, Ill. (See page 791.)
Martin-Parry Corp., W. Market St. & Highland Ave., Indianapolis, Ind.
Martin Truck & Body Corp., W. Market St. & Highland Ave., York, Pa.
Marx, Geo. B., 192-206 Newell St., Brooklyn, N. Y.
Meckel, Fred L., 9-13 E. 13th St., Chicago, Ill.
Mertz Co., 704-08 Woodland Ave., Cleveland, O.
Metropolitan Body Co., 480-84 Grand St., Bridgeport, Conn.
Mifflinburg Body Co., Mifflinburg, Pa. (See page 145.)
Milburn Wagon Co., 3134 Monroe St., Toledo, O.
Miller Co., E. M., 113 S. Sixth St., Quincy, Ill.
Miller & Co., A. J. Bellefontaine, O.
Miscampbell Body Co., H., 306 S. First Ave., E., Duluth, Minn. "Richeson's 3-in-1."
Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
Molzen Co., Peter, 522 W. 30th St., New York, N. Y.
Mount Clemens Truck Body Co., Cass Ave. & G. T. R. R., Mt. Clemens, Mich.
Mulholland Co., Dunkirk, N. Y.
New Haven Carriage Co., New Haven, Conn. (See page 131.)
New Ideal Wagon Works, 1845 Park Ave., New York, N. Y.
Nicoulin Dray Mfg. Co., Algona, Ia.
Niederhut Carriage Co., 3556-60 Walnut St., Denver, Colo.
Nonzi—See Isett Auto Body & Repair Shop.
Novelty Carriage Works, 313 Second Ave., Spokane, Wash.
Obenehain-Boyer Co., Logansport, Ind. (See page 125.)
Oberfell, W. M., 131-37 Ninth St., Jersey City, N. J.
Olson Auto Body & Wagon Works, 901-11 W. North Ave., Chicago, Ill.
Omaha Body Co., 1539 N. 16th St., Omaha, Neb. "Three-In-One."
Parvis, Jr., & Co., Geo. W., 543-53 Rising Sun Ave., Philadelphia, Pa.
Paterson Vehicle Co., 257-59 Market St., Paterson, N. J.
Patriot Motors Co., Lincoln, Neb.
Pehl Body Co., Tenth & Euclid Sts., Kansas City, Mo.
Perfection—See Isett Auto Body & Repair Shop.
Perin Automotive Engineering Co., 346 Commonwealth Ave., Brookline, Mass. "Rolloff."
Peters Auto Body & Spring Works, 413-20 Ensor St., Baltimore, Md.
Pfeiffer Top & Body Corp., 2523-27 Leavenworth St., Omaha, Neb.
Porter-Brown Auto Body Co., 1410 Santa Fe Ave., Los Angeles, Cal.
Providence Body Co., 123 Narragansett St., Providence, R. I.
Randall—See Sunflower Body Works.
Ranger—See Southern Motor Mfg. Association.
Raulang—See Baker R. & L. Co.
Rech-Marbaker Co., Eighth St. & Girard Ave., Philadelphia, Pa.
Reedy Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.
Reiss Body Co., 3029 Baker St., Detroit, Mich.
Richeson's 3-in-1—See Miscampbell Body Co.
Roeder Mfg. Co., Fred., 1396-1400 Atlantic Ave., Brooklyn, N. Y.
Rolloff—See Perin Automotive Engineering Co.
Schaefer Wagon Co., Gustav, 4166-80 Lorain Ave., Cleveland, O.
Schnabel & Sons, G. A., 2410 Penn Ave., Pittsburgh, Pa.
Scholl & Son, Anton, 380-82 Flushing Ave., Brooklyn, N. Y.
Schubert Wagon Co., August, 1-5 E. Warner St., Onalda, N. Y.
Schukraft & Sons, Wm., 333-43 Fulton St., Chicago, Ill.
Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.
Scott Auto Body Co., E. 18th Ave. & Washington St., Denver, Colo.
Sebastian Wagon Co., 425 E. 53d St., New York, N. Y.
Shadbolt Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.
Simplex Mfg. Co., Conneautville, Pa.
Sisman Co., Andrew C., 1321 Beaufait Ave., Detroit, Mich.
Smith Carriage Co., R. J., Lake & Lyell Aves., Rochester, N. Y.
South Bend Spring Wagon & Carriage Co., 210-16 S. St. Joseph St., South Bend, Ind.
Southern Motor Mfg. Assn., Beatty Bldg., Houston, Tex. "Ranger."
Spaulding Mfg. Co., 333 Spring St., Grinnell, Ia.
Springfield Commercial Body Co., 335 Liberty St., Springfield, Mass.
Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
Standard Auto Top & Body Co., 1333 Race St., Philadelphia, Pa.
Standard Body Co., White Pigeon, Mich.
Standard Body Co., Angola, Ind.
Standard Commercial Body Corp., 423-31 E. 104th St., New York, N. Y.
Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Ia.
Stockbridge Body Co., 130 Union St., Springfield, Mass.
Streator Hearse & Body Co., 310 E. La Rue St., Streator, Ill.
Stunkard Bros., 24-26 N. Meridian St., Brasil, Ind.
Sunflower Body Works, Topeka, Kans. "Randall."
Tarco—See Tegetmeier & Riepe Co.

Everything is listed under the NOUN or principal word

BODIES, Wood Commercial Car (Continued)

Tegetmeier & Riepe Co., 771-78 First Ave., New York, N. Y. "Tarco."
Texas Wagon Works, Houston, Texas.
Three-in-One—See Omaha Body Co.
3 in 1—See American Body Co.
Timppe Bros., 2300 Walnut St., Denver, Colo.
Tompson, N. W., 10 Scotia St., Boston, Mass. (New England Distributors for Field Bodies.) (See page 161.)
Trenton Body Co., 1-3 Center Ct., Trenton, N. J.
Trippensee Mfg. Co., 12th St. & Stanley Ave., Detroit, Mich.
Troy Body Co., Crawford St. & Big Four Ry., Troy, O.
Truck Engineering Co., 7081 Broadway, Cleveland, O.
Truck Service Co., 116 F Ave., West, Cedar Rapids, Ia.
Uhlenhaut Bros. Wagon Co., 1222-24 Merchant St., St. Louis, Mo.
Unit Mfg. Co., 15 Cedar St., Amesbury, Mass.
United Automotive Body Co., Euclid Ave. & 49th St., Cleveland, O.
Universal Body Co., Chicago St., Jonesville, Mich.
Van Auken Co., South Blvd. & Grand Trunk R. R., Pontiac, Mich.
Van Dorn Iron Works Co., 2685 E. 79th St., Cleveland, O.
Walker Carriage Co., Merrimack, Mass.
Walker & Werner, 207-13 Fayette St., Peoria, Ill.
Waterbury Body Co., Thomaston, Conn.
Waterloo Body Corp., Waterloo, N. Y.
Watkins Commercial Body Corp., 666-72 Genesee St., Buffalo, N. Y.
Wentworth & Irwin, 200 Second St., Portland, Ore.
Whitman Agricultural Co., St. Louis, Mo.
Williamson, Sam, 1800 Texas St., El Paso, Texas.
Willoughby Co., Dwyer Ave. & Turner St., Utica, N. Y.
Woodward Mfg. Co., Austin, Tex.
Woonsocket Wagon Mfg. Co., 16 Worrall St., Woonsocket, R. I.
Wright Co., Thomas, 71-78 Colden St., Jersey City, N. J.
York Carriage Co., Franklin & Hay Sts., York, Pa.
York Body Corp., Linden & Belvidere Aves., York, Pa.

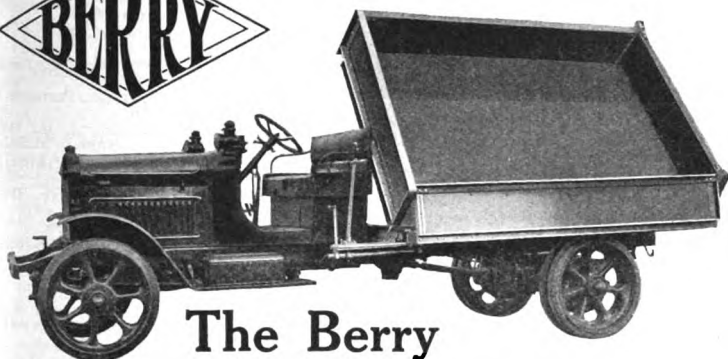
BODIES, Special Dumping

(For other Commercial Bodies—See Bodies, Metal Commercial; also Bodies, Wood Commercial)

American Truck Body Co., Martinsville, Va. "Fontaine."
Anheuser-Busch Co., Ninth & Arsenal Sts., St. Louis, Mo.
Arcadia Trailer Corp., 21 Murray St., Newark, N. Y.
Archer Iron Works, 34th Pl. & Western Ave., Chicago, Ill. (See page 461.)
Auburn Wagon Co., 528 W. Race St., Martinsburg, W. Va. "20th Century."
Auglaize Holst & Body Co., New Bremen, O.
Auto Truck Steel Body Co., 3023-46 Carroll Ave., Chicago, Ill. "Dalley."
Automatic Dump Car Co., 1300 Ernsperger St., South Bend, Ind.
Barry's—See Truck Service Co.
Berry Hydraulic Co., Erie, Pa. (See page 141.)
Bruder, Lawrence, 211-13 W. Second St., Cincinnati, O. "Easy Dump."

Carll's Sons, Chas., W. Coles St., Trenton, N. J.
Charlotte Wagon & Auto Co., Mint & Bland Sts., Charlotte, N. C.
Columbia Wagon Co., Columbia, Pa. "Jennings."
Columbian Steel Tank Co., 1510-1025 W. 12th St., Kansas City, Mo. (See page 849.)
Commercial Auto Body Co., 5401 N. Bulwer Ave., St. Louis, Mo. "Hi-Grade." (See page 145.)
Dalley—See Auto Truck Steel Body Co.
Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
Easton Car & Construction Co., 50 Church St., New York, N. Y.
Easy Dump—See Bruder, Lawrence.
Excelsior—See Rodenhausen's Excelsior Wagon Works.
Fitz Gibbon & Crisp, Calhoun St. & P. & R. K. R., Trenton, N. J.
Fontaine—See American Truck Body Co.
Gammon—See Pechstein Iron Works.
Graves Co., L. C., Springboro, Pa.
Hanger Co., C. F., 2046 E. 71st St., Cleveland, O.
Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.
Hell Co., 1136-40 Montana Ave., Milwaukee, Wis. (See page 459.)
Hi-Grade—See Commercial Auto Body Co.
Hummel Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for Columbian Bodies.) (See page 143.)
Interboro Holst & Body Corp., Ely, William & Henry Sts., Long Island City, N. Y.
Jennings—See Columbia Wagon Co.
K. & J.—See Kilbourne & Jacobs Mfg. Co.
Kilbourne & Jacobs Mfg. Co., Columbus, O. "K. & J."
Lally Commercial Body Co., Paris St., Everett, Mass.
Lee Trailer & Body Co., 2333 S. LaSalle St., Chicago, Ill. (See page 897.)
Littleford Bros., 453-57 E. Pearl St., Cincinnati, O.
Luedinghaus Quality Motor Trucks, Broadway, Howard to Mound St., St. Louis, Mo.
Lynch Mfg. Co., Hammond, Ind.
McDermott Body Corp., 123-25 Sixth St., Long Island City, N. Y.
Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.
Mayer Wagon Co., 6461 Franktown Ave., E. E., Pittsburgh, Pa.
Metropolitan Body Co., 420-34 Grand St., Bridgeport, Conn.
Michigan Bridge & Pipe Co., Lansing, Mich. "Yale."
National Steel Products Co., 1611-21 Crystal Ave., Kansas City, Mo.
New Ideal Wagon Works, 1345 Park Ave., New York, N. Y.
Patriot Motors Co., Lincoln, Neb.
Pechstein Iron Works, Ninth & Johnson Sts., Keokuk, Iowa. "Gammon."
Providence Body Co., 128 Narragansett St., Providence, R. I.
Ranger—See Southern Motor Mfg. Association.
Reedy Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.
Rodenhausen's Excelsior Wagon Works, 1425-37 Hutchinson St., Philadelphia, Pa. "Excelsior."
Schaefer Wagon Co., Gustav, 4166-80 Lorain Ave., Cleveland, O.
Shadbolt Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.
Simplex Mfg. Co., Conneautville, Pa.

Everything is listed under the NOUN or principal word



The Berry Three-Way Hydraulic Hoist and Dump Body



This is the most serviceable Dump Body that can be devised. Its operation is so simple, so absolutely under control that the Body may be handled by any one.

It is the greatest time saver—and time is what counts in construction work and in motor transportation in general.

Berry Three-Way Dump Bodies are hydraulically operated. No matter how great the load is, a pull of the lever dumps it exactly where it is wanted.

It is the most agile dumping body, because it dumps the load not only rearward, but also to the right or left, thus avoiding the need for maneuvering.

Berry Three-Way Hydraulic Dump Bodies are built to fit any motor truck.

Truck manufacturers and dealers, contractors, fleet owners and others interested in securing the utmost efficiency in truck operation are invited to investigate the merits of this attractive proposition.

BERRY HYDRAULIC COMPANY
Erie, Pa.

Please mention The Automobile Trade Directory

BODIES, Special Dumping (Continued)

Slor & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.
 Southern Motor Mfg. Assn., Beatty Bldg., Houston, Tex. "Ranger."
 Standard Steel Works, 1740 Tracy Ave., Kansas City, Mo. (See page 125.)
 Statten-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa.
 Stewart Iron Works Co., 17th St. & Madison Ave., Covington, Ky.
 TEC—See Truck Engineering Co.
 Transportation Equipment Co., 7641 Gratiot Ave., Detroit, Mich.
 Truck Engineering Co., 7031 Broadway, Cleveland, O. "TEC."
 Truck Service Co., 116 F Ave. W., Cedar Rapids, Ia. "Barry's."
 20th Century—See Auburn Wagon Co.
 Two-Way—See Warner Mfg. Co.
 United Automotive Body Co., Euclid Ave. & 49th St., Cleveland, O.
 Warner Mfg. Co., 31 Main St., Beloit, Wis. "Two-Way."
 Wood Hydraulic Holst & Body Co., 4190 Bellevue Ave., Detroit, Mich. (See page 459.)
 Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
 Wright Co., Thomas, 71-73 Colden St., Jersey City, N. J.
 Yule—See Michigan Bridge & Pipe Co.

BODIES, SPECIAL DUMPING, FOR FORDS
—See Bodies, Automatic Dumping**BODIES, Special Commercial, for Fords**

(Including also commercial bodies to fit all truck attachments and convertible bodies of all types)

A.B.C.—See Clippinger & Sons Mfg. Co.
 Abington Wagon Co., Abington, Ill.
 Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "B.C."
 Arcadia Trailer Corp., 21 Murray St., Newark, N. Y.
 Auburn Wagon Co., 528 W. Race St., Martinsburg, W. Va.
 Auto Body Works, Pierce Ave. & Elghth St., Appleton, Wis.
 B.C.—See Ames Co.
 Babcock Co., H. H., Watertown, N. Y.
 Badger Auto Body Co., 309-13 Hanover St., Milwaukee, Wis.
 Badger Mfg. Co., Eighth & M Sts., (Havelock) Lincoln, Nebr.
 Bailey Auto Body & Sales Co., 21st & Olive Sts., St. Louis, Mo.
 Barnett Auto Body Co., 430 Golden Gate Ave., San Francisco, Cal.
 Bay City Auto Body Co., Center Ave. & Pere Marquette R. R., Bay City, Mich.
 Blehls Wagon & Auto Body Works, 31 S. Fifth St., Reading, Pa.
 Blount Carriage & Buggy Co., 89 S. Forsythe St., Atlanta, Ga.
 Brooklyn Commercial Body Co., 470-74 Clermont Ave., Brooklyn, N. Y.
 Brownell & Burt, 10 Washington St., Taunton, Mass.
 Bruder, Lawrence, 211-13 W. Second St., Cincinnati, O.
 Brumac—See Bruun-McClure Co.
 Bruun-McClure Co., 311 Cleveland Ave., Columbus, O. "Brumac."
 Budd Mfg. Co., Edward G., Hunting Park Ave. & 25th St., Philadelphia, Pa.

Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo.
 Calumet Truck Body Corp., Calumet, Mich.
 Cantrell & Co., J. T., Wall St., Huntington, N. Y.
 Champion Wagon Co., Owego, N. Y.
 Charlotte Wagon & Auto Co., Mint & Bland Sts., Charlotte, N. C.
 Clark Mfg. Co., J. L., 519 High St., Oshkosh, Wis.
 Cleveland Top & Specialty Co., Carnegie & E. 65th Sts., Cleveland, O.
 Clippinger & Sons Mfg. Co., A. B., 1100 S. Mill St., Kansas City, Kans. "A.B.C."
 Collings Carriage Co., Front & Arch Sts., Camden, N. J.
 Columbia Body Co., 45 Selden Ave., Detroit, Mich.
 Columbia Wagon Co., Columbia, Pa.
 Columbian Steel Tank Co., 1519-1625 W. 12th St., Kansas City, Mo. (See page 849.)
 Columbus Body Co., Columbus, O.
 Commercial Auto Body Co., 5401 N. Bulwer Ave., St. Louis, Mo. "Hi-Grade." (See page 145.)
 Continental Car Co. of America, 4731 Park Blvd., Louisville, Ky.
 Defiance Carriage Co., Perry & Gorman Sts., Defiance, O.
 De Kalb Wagon Co., De Kalb, Ill.
 Duken Service Crane Co., 933 E. 43rd St., Chicago, Ill.
 Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
 Easton Car & Construction Co., 50 Church St., New York, N. Y.
 Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.
 Eureka Co., First St., Rock Falls, Ill.
 Express Body Corp., Crystal Lake, Ill.
 Field Body Corp., Owosso, Mich.
 Fitz Gibbon & Crisp, Calhoun St. & P. & R. R. R., Trenton, N. J.
 Ford Body Co., 301 N. Green St., Greensboro, N. C.
 General Body Co., Bemidji, Minn.
 Geneva Wagon Co., Geneva, N. Y.
 Gilmore Mfg. Co., Charleston, W. Va.
 Graves Co., L. C., Springboro, Pa.
 Grove City Body Mfg. Co., 401 Erie Ave., Grove City, Pa.
 Haberer & Co., Boston St. & C. H. & D. Ry., Cincinnati, O.
 Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.
 Harrison Co., Robert, 324-28 W. First St. (S. Boston), Boston, Mass.
 Henney Buggy Branch of Moline Plow Co., Moline, Ill.
 Henney & Co., John W., Louis Ave. & Jackson St., Freeport, Ill.
 Hercules Corp., Morton Ave., Evansville, Ind.
 Hi-Grade—See Commercial Auto Body Co.
 Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.
 Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill. "Utility."
 Hoover Wagon Co., York, Pa.
 Hopp Carriage Co., Fourth & Walnut Sts., Mifflinburg, Pa.
 Hughes—Keenon Co., Mansfield, O.
 Izett Auto Body & Repair Shop, 1432-50 Speer Blvd., Denver, Colo. "Perfection," "Nonxl."
 Jennings Automatic Dump Body, Roanoke, Va.
 Koenig & Luhrs Wagon Co., 320 S. Sixth St., Quincy, Ill.
 Kratzer Carriage Co., 100 S. First St., Des Moines, Ia.
 Lamco—See Lehman Mfg. Co.

Everything is listed under the NOUN or principal word

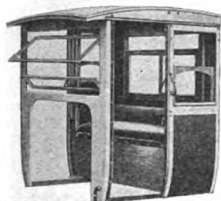
"HOLLER for HUMMEL"

TRUCK EQUIPMENT

CABS, HOISTS, BODIES, WINCHES, TANKS AND TRAILERS



Two-Ton Truck with a Six-Ton Load. Highway "Fifth-Wheel" Trailer



Rain or Shine Cab. Lasts Forever
Fits Any Chassis



"Partition Mounted" Truck Tank, 3 Compartment
With Rear Can Box and Side Can Rack



"Columbian" Hoist and Body on Truck



"Every Purpose" Dump Body. May Be Used As
Express-Platform or Stake Body by Removing
Sides and Lowering Tailgate



"Let the Engine Do the Work" with M-M
Capstan Winch and Truck Crane



Hoist and Body on Trailer

We also manufacture underground storage tanks for gasoline.
Special steel bodies for handling brick, concrete, lumber, asphalt
and garbage. End dump or side dump bodies—Riveted or welded.

HUMMEL MFG. COMPANY
3014 La Salle Street ST. LOUIS, MISSOURI

Please mention The Automobile Trade Directory

BODIES, Special Commercial, for Fords (Continued)

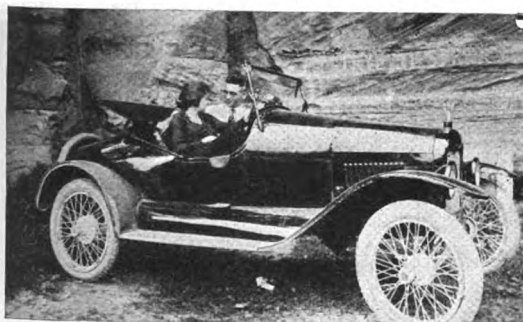
Lehman Mfg. Co., 310 Fourth St., Cannelton, Ind. "Lamco." (See page 145.)
 Littleford Bros., 453-57 E. Pearl St., Cincinnati, O.
 Lobes Body Co., 17 N. West St., Mt. Vernon, N. Y.
 Lowell Auto Body Co., Lowell, Mich.
 M & P—See Messenger & Parks Mfg. Co.
 McKay Carriage Co., Grove City, Pa.
 Martin-Parry Corp., W. Market St. & Highland Ave., York, Pa.
 Messenger & Parks Mfg. Co., Aurora, Ill. "M & P."
 Michigan Bridge & Pipe Co., Lansing, Mich. "Yule."
 Mifflinburg Body Co., Mifflinburg, Pa. (See page 145.)
 Moline Plow Co. (Stephens Motor Works), Moline, Ill.
 Monday Co., A. J., 327 Fourth St., Milwaukee, Wis.
 Murphy Co., P. J., 19-21 Main St., N. E., Minneapolis, Minn.
 National Steel Products Co., 1611-21 Crystal Ave., Kansas City, Mo.
 Nepeless Mfg. Corp., Lapeer, Mich.
 New England Mills Co., 1027 Van Buren St., Chicago, Ill.
 Niederhut Carriage Co., 3556-60 Walnut St., Denver, Colo.
 Nonxi—See Izett Auto Body & Repair Shop.
 Pehl Body Co., Tenth & Euclid Sts., Kansas City, Mo.
 Perfection—See Izett Auto Body & Repair Shop.
 Pfeiffer Top & Body Corp., 2523-27 Leavenworth St., Omaha, Neb.
 Press' Sons, Jacob, 501 W. 33d St., Chicago, Ill.
 Ranger—See Southern Motor Mfg. Association.
 Ready Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.
 Southern Motor Mfg. Assn., Beatty Bldg., Houston, Tex. "Ranger."
 Standard Commercial Body Corp., 423-31 E. 104th St., New York, N. Y.
 Spaulding Mfg. Co., 933 Spring St., Grinnell, Ia.
 Springfield Commercial Body Co., 385 Liberty St., Springfield, Mass.
 Standard Body Co., Angola, Ind.
 Standard Body Co., 934 Lowe St., Appleton, Wis.
 Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa. "Woodbury."
 Stevens Implement Co., Sidney, Ogden, Utah.
 Stover Steel Tank & Mfg. Co., Hancock Ave., Freeport, Ill.
 Stunkard Bros., 24-26 N. Meridian St., Brazil, Ind.
 Texas Wagon Works, Houston, Tex.
 Thompson, N. W., 10 Scotia St., Boston, Mass. (New England Distributors for Field Bodies.) (See page 161.)
 Truck Engineering Co., 7031 Broadway, Cleveland, O.
 United Automotive Body Co., Euclid Ave. & 49th St., Cleveland, O.
 Utility—See Hill Pump Valve Co.
 Waterloo Body Corp., Waterloo, N. Y.
 Watkins Commercial Body Corp., 666-72 Gene-see St., Buffalo, N. Y.
 Wayne Works, 16th & North F Sts., Richmond, Ind.
 Weatherproof Body Corp., Corunna, Mich. (See page 185.)
 Whetstone & Co., John H., Court St., Lapeer, Mich.
 Whitfield & Son, W. H., Penn Yan, N. Y.

Williams Wagon Works, Third St., Macon, Ga.
 Woodbury—See Steffen-Van Steenwyk Co.
 Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
 York Body Corp., Linden & Belvidere Aves., York, Pa.
 York Carriage Co., Franklin & Hay Sts., York, Pa.
 Yule—See Michigan Bridge & Pipe Co.

BODIES, Special Passenger, for Fords (Including runabout, touring car, special speedster or racing bodies and closed bodies)

ABC—See Automotive Body Co.
 A-S-P—See Allied Steel Products Co.
 Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "A-S-P."
 Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "Amesbilt."
 Amesbilt—See Ames Co.
 Aristocrat—See Dunham Co.
 Auto Hote Co., 1515 Leeswood Blvd., Kansas City, Mo.
 Auto Remodeling Co., 1508 S. Michigan Ave., Chicago, Ill. "Tourist Camp."
 Automotive Body Co., 549 W. Washington Blvd., Chicago, Ill. "ABC."
 Autowa—See Ottawa Body Co.
 Blue Streak—See Izett Auto Body & Repair Shop.
 Breeden & Cole, 1245 Market St., San Francisco, Cal.
 Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.
 Bruder, Lawrence, 211-13 W. Second St., Cincinnati, O.
 Bub Body Corp., 338 S. Water St., Milwaukee, Wis.
 Budd Mfg. Co., Edward G., Hunting Park Ave. & 26th St., Philadelphia, Pa.
 Camping Car Co., 2100 Locust St., St. Louis, Mo. "Lamstead Kampkar."
 Champion Racing Body Co., 1920 S. Wabash Ave., Chicago, Ill.
 Charlotte Wagon & Auto Co., Mint & Bland Sts., Charlotte, N. C.
 Chauncey Body Corp., 2601 Archer Ave., Chicago, Ill. (See page 131.)
 Columbia Body Co., 45 Selden Ave., Detroit, Mich.
 Craig-Hunt—See Speedway Engineering Co.
 Danielson Tool Co., Fulton St., Wausau, Wis.
 Dayton Metal Body Co., 500 Kiser St., Dayton, O.
 Dixie—See Dunham Co.
 Dunham Co., Thos., Aurora, Ill. "Patrician," "Symphony," "Aristocrat," "Taxedo," "Dixie." (See page 145.)
 Elberg-Keller Body Mfg. Co., 29th & Cherry Sts., Kansas City, Mo.
 Empire Auto Specialty Co., 1426 Blue Island Ave., Chicago, Ill.
 Fidelity—See New England Mills Co.
 Fitz Gibbon & Crisp, Calhoun St. & P. & R. R. R., Trenton, N. J.
 Ford Body Co., 301 N. Green St., Greensboro, N. C.
 General Body Co., Bemidji, Minn.
 Izett Auto Body & Repair Shop, 1432-60 Speer Blvd., Denver, Colo. "Blue Streak."
 Kelsey Wheel Co., Detroit, Mich. (See page 953.)
 Lamco—See Lehman Mfg. Co.
 Lamstead Kampkar—See Camping Car Co.
 Lehman Mfg. Co., 310 Fourth St., Cannelton, Ind. "Lamco." (See page 145.)
 Mac Innes Bros., 120-22 22nd St., Toledo, O.
 Majestic Mfg. & Specialty Co., 1355 S. Michigan Ave., Chicago, Ill. (See page 373.)
 Morton & Brett, 811-15 E. 23d St., Indianapolis, Ind.
 National Body Mfg. Co., 810 17th Ave., N., Nashville, Tenn.

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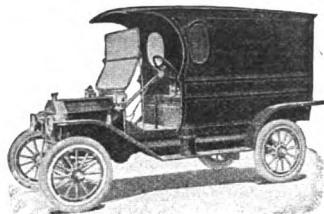
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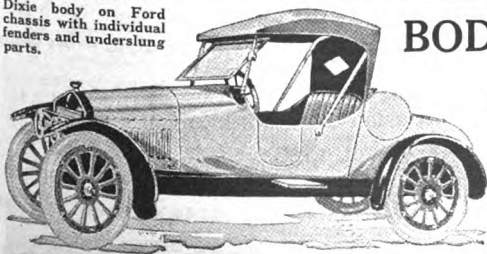
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**BODIES, Special Passenger, for Fords
(Continued)**

New England Mills Co., 1027 Van Buren St., Chicago, Ill. "Fidelity."
 New Star Auto Metal Works, 1718 S. Wabash Ave., Chicago, Ill. (See page 131.)
 Ottawa Body Co., Ottawa, Ill. "Autowa."
 Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
 Patrician—See Dunham Co.
 Penn Square Body Co., 5405 Euclid Ave., Cleveland, O.
 Race-Way Body Co., City Trust Bldg., Indianapolis, Ind.
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "Speed-King."
 Royal Auto Body Co., 3727-37 Cottage Grove Ave., Chicago, Ill. "Thorobred."
 Selden Mfg. Co., 41-61 Selden Ave., Detroit, Mich.
 Sior & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.
 Speed-King—See Roose Mfg. Co.
 Speedway Engineering Co., 810 N. Illinois St., Indianapolis, Ind. "Craig-Hunt." (See page 381.)
 Symphony—See Dunham Co.
 Tompason, N. W., 10 Scotia St., Boston, Mass. (New England Distributors for Dayton Bodies.) (See page 161.)
 Thorobred—See Royal Auto Body Co.
 Tourist Camp—See Auto Remodeling Co.
 Tuxedo—See Dunham Co.
 Unit Mfg. Co., 15 Cedar St., Amesbury, Mass.
 United Automotive Body Co., Euclid Ave. & 49th St., Cleveland, O.
 Universal Auto Products Co., 3727 Cottage Grove Ave., Chicago, Ill.
 Universal Body Corp., Mishawaka, Ind.
 Wabash Auto Radiator Mfg. Co., 1117-23 S. Wabash Ave., Chicago, Ill.
 Weatherproof Body Corp., Corunna, Mich. (See page 185.)
 Williams Wagon Works, Third St., Macon, Ga.

BODY ANTI-SQUEAK—See Lining, Body or Frame

BODY BUILDERS' CLAMPS—See Clamps, Woodworkers

BODY GLASS—See Glass, Polished Plate

BODY HANDLING TRUCKS—See Trucks, Body Handling

BODY HOISTS—See Hoists, Truck Body

BODY IRONS—See Irons, Body

BODY LINING—See Lining, Body or Frame

BODY PADDING—See Lining, Body or Frame

BODY PARTS—See Parts, Wood Automobile Body

BODY POLISH—See Polishes, Automobile Body

BODY RUBBING MACHINES—See Machines, Body Rubbing

BODY STOCK—See Lumber, Automobile; also Aluminum, Sheet; also Steel, Sheet

BOILER ALARMS—See Columns, Water

BOILER COLUMNS—See Columns, Water

BOILER FEED PUMPS—See Pumps, Boiler Feed

BOILER FEED REGULATORS—See Regulators, Water Level

BOILER INJECTORS—See Injectors, Boiler Feeding

BOILER TUBE EXPANDERS—See Expanders, Boiler Tube

BOILER WATER GAGES—See Gages, Boiler

BOILERS, Automobile Steam

Stanley Motor Carriage Co., 44 Hunt St., Newton, Mass.

BOILERS, Steam Engine Cleaning

(For cleaning engine, transmission or axle parts by steam)

Eureka—See Lattner Mfg. Co.
 Lattner Mfg. Co., P. M., 515 F Ave. W., Cedar Rapids, Iowa. "Eureka."

BOLT AND SCREW CASES—See Cases, Bolt

BOLT CLIPPERS—See Clippers, Bolt and Rivet

BOLT EXTRACTORS—See Extractors, Stud Bolt

BOLT LUBRICATORS—See Lubricators, Spring and Shackle Bolt

BOLT WRENCHES—See Wrenches, Nut and Bolt

BOLTS, Automatic Bearing

Kilnock Co., Second & Harrison Sts., Davenport, Ia.

V. & S. Automatic Bolt Co., 1120 State Lake Bldg., Chicago, Ill. (See page 147.)

BOLTS, CAP—See Screws, Cap and Set

BOLTS, CARRIAGE—See Bolts, Machine and Carriage

BOLTS, DEMOUNTABLE RIM—See Bolts, Special Demountable Rim

BOLTS, ENGINE for Fords—See Bolts, Special for Fords

BOLTS, Machine and Carriage

Aetna Screw & Bolt Co., 213 N. Desplaines St., Chicago, Ill.

Atlas Bolt & Screw Co., Cleveland, O. (See page 745.)

Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.

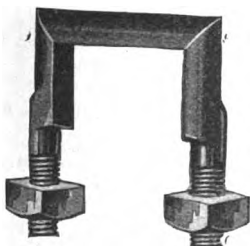
Clark Bros. Bolt Co., Milldale, Conn.

Columbus Bolt Works Co., Columbus, O. (See page 147.)

Eagle—See Skelly Bolt Co.

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 Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."
 Gordon-Little Co., 122-30 N. Senate Ave., Indianapolis, Ind.
 Graham Nut Co., 1817-19 W. Carson St., Pittsburgh, Pa.
 Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
 Haydon, A. & M., 304 N. 22d St., Philadelphia, Pa.
 Kirk-Latty Mfg. Co., 1971 W. 85th St., Cleveland, O.
 Lamson & Sessions Co., 2188 Scranton Rd., Cleveland, O.
 Lans & Sons, Mathew, 2907 Carson St., Pittsburgh, Pa.
 Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.
 National Lock Co., Rockford, Ill.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 Oliver Iron & Steel Co., Tenth & Muriel Sts., Pittsburgh, Pa.
 Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Pittsburgh Screw & Bolt Co., Preble Ave. (N. S.), Pittsburgh, Pa.
 Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
 Rhode Island Tool Co., Providence, R. I.
 Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.
 St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
 Skelly Bolt Co., Thomas P., 24th & Callowhill Sts., Philadelphia, Pa. "Eagle."
 Upson Nut Co., Scranton Rd., Cleveland, O.

BOLTS, SHACKLE—See Bolts, Spring Shackle

BOLTS, Special Demountable Rim

Hayne Mfg. Co., Bushnell, Ill.
 (See page 149.)
 Jiffy Rim Lock Co., 313 Scarritt Arcade, Kansas City, Mo. (See page 149.)

BOLTS, Special, for Fords

Acme Mfg. Co., Boonton, N. J.
 Ban-Rov & Co., 2230 S. Wood St., Chicago, Ill.
 Benford Auto Products, Inc., Mt. Vernon, N. Y. (See page 645.)
 Bridgers Co., J. D., Florence, S. C.
 (See page 727.)
 Cincinnati Screw Co., Twilight, O.
 (See page 735.)
 Danham Co., Thos., Aurora, Ill.
 (See page 145.)
 Metzger Welding Co., 1652 Powers St., Cincinnati, O.
 Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.

BOLTS, Spring Shackle

(Complete bolt with oil or grease cup attached)

Bard Mfg. Co., Royersford, Pa.
 (See page 149.)

Bowen Products Corp., Auburn, N. Y.
 "Empress." (See page 313.)
 Bowen Products Corp., 2760 W. Warren Ave., Detroit, Mich.
 Brewer Tichenor Corp., Cortland, N. Y.
 Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
 Clark Bros. Bolt Co., Milldale, Conn.
 Cleveland Piston Pin & Bolt Co., Stuyvesant Bldg., Cleveland, O.
 Columbus Bolt Works Co., Columbus, O.
 (See page 147.)
 Empress—See Bowen Products Corp.
 Ferry Cap & Set Screw Co., Cleveland, O.
 (See page 743.)
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Fostoria Screw Co., E. Railroad St., Fostoria, O.
 Hyklas—See Parts Service Co.
 Metzger Welding Co., 1652 Powers St., Cincinnati, O.
 Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 149.)
 Phoenix Mfg. Co., Grand River at Loraine, Detroit, Mich. (See page 725.)
 Steel Products Co., Cleveland, O.
 (See page 915.)
 Upson Nut Co., Unionville, Conn.
 U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.)
 (See page 639.)

BOLTS, STEP—See Bolts, Machine and Carriage

BOLTS, Stove and Tire

American Screw Co., 21 Stevens St., Providence, R. I.
 Atlas Bolt & Screw Co., Cleveland, O.
 (See page 745.)
 Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 399.)
 Clark Bros. Bolt Co., Milldale, Conn.
 Columbus Bolt Works Co., Columbus, O.
 (See page 147.)
 Corbin Screw Corp., 227 High St., New Britain, Conn.
 Falls Rivet Co., Kent, O.
 Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."
 Gordon-Little Co., 122-30 N. Senate Ave., Indianapolis, Ind.
 Kirk-Latty Mfg. Co., 1971 W. 85th St., Cleveland, O.
 Lamson & Sessions Co., 2188 Scranton Rd., Cleveland, O.
 National Lock Co., Rockford, Ill.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
 Russell & Erwin Mfg. Co., New Britain, Conn.
 Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.
 Upson Nut Co., Scranton Rd., Cleveland, O.

BOLTS, TIRE—See Bolts, Stove and Tire

BONNETS, ENGINE—See Hoods, Engine

BONNETS, MOTOR—See Hoods, Engine

BONNETS, UNDER—See Fans, Dust

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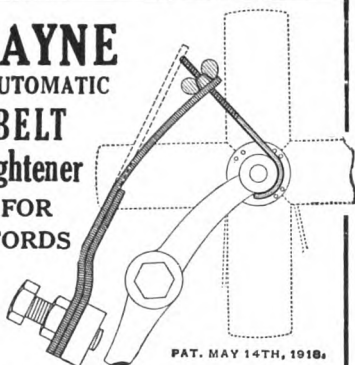
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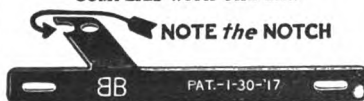
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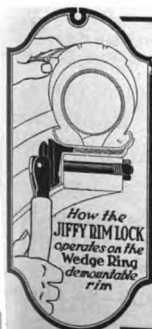
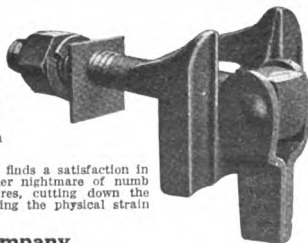
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Accurate System & Manifold Co., 403 Broome St., New York, N. Y.
 Automotive Systems & Forms Co., 231 W. 58th St., New York, N. Y. (See page 51.)
 Comfort Printing Specialty Co., 107 N. Eighth St., St. Louis, Mo.
 Gregory, Mayer & Thom Co., 19-21 Cadillac Sq., Detroit, Mich. (See page 151.)
 Harton & Co., Thos. J., 313 Church St., New York, N. Y.
 Motor Car Service Bureau, 2627 John R. St., Detroit, Mich. (See page 155.)
 Quality Shop, 220 K. of P. Bldg., Franklin, Ind.
 Tallman, Robbins & Co., 316 W. Superior St., Chicago, Ill.

BOOKS and PERIODICALS

(Covering only Books and Periodicals advertised in this publication)

Abrasive Industry, Cleveland, O. (See page 321.)
 Chicago Tribune, Chicago, Ill. (See page 49.)
 Colliers, 416 W. 13th St., New York, N. Y. (See page 51.)
 Michigan State Auto School, 3720 Woodward Ave., Detroit, Mich. (See page 151.)
 New York American, 1834 Broadway, New York, N. Y. (See page 51.)
 Tire-Practy System, 63 W. Master St., Akron, O. (See page 151.)

BOOSTERS, BATTERY—See Rectifiers, Alternating Current

BOOTS, JOINT — See Boots, Steering Knuckle

BOOTS, Motorists' Over

(Fur or felt boots to wear over regular shoe when motoring in cold weather)

Putnam & Co., A. H., 154 Maple St., Danvers, Mass.

BOOTS, Steering Knuckle and Joint

(Leather, Ottoloth and Fabric Covers for enclosing Steering Connections and Universal Joints)

Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 207.)
 Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)
 Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y.
 Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)
 Bailey-Fitwell Co., 1316 S. Grand Ave., Los Angeles, Cal.
 Bemco—See B. E. Mfg. Co.
 Campbell—See Perkins-Campbell Co.
 Carter Co., George R., Connersville, Ind.
 Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Economy Stay Co., Jefferson City, Mo.
 Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Hager & Son, Chas., 1926 Broadway, New York, N. Y.

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass.

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)

Perkins - Campbell Co., Cincinnati, O. "Campbell." (See page 299.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.

Sutherland Leather & Felt Co., 139 Beaubien St., Detroit, Mich.

BOOTS, Steering Knuckle, for Fords

(Leather, Ottoloth and Fabric Covers for enclosing Steering Connections)

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)

Campbell—See Perkins-Campbell Co.

Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)

Perkins - Campbell Co., Cincinnati, O. "Campbell." (See page 299.)

BOOTS, TIRE REPAIR—See Sleeves, Tire Repair

BOOTS, TOP—See Covers, Top

BOOTS, UNIVERSAL JOINT—See Boots, Steering Knuckle

BORING BARS—See Bars, Boring; also Tools, Portable Cylinder Reborng

BORING HEADS—See Heads, Boring

BORING MACHINES—See Machines, Boring; also Machines, Cylinder Reborng; also Machines, Wood Boring

BORING MILL CHUCKS—See Chucks, Boring Mill

BOTTLES, Vacuum

Bailey-Fitwell Co., 1316 S. Grand Ave., Los Angeles, Cal.

Bluebird—See Miller & Son Co.

Ferrostat—See Stanley Insulating Co.

Icy-Hot Bottle Co., Second & Elm Sts., Cincinnati, O.

Lorenzen Bros. Mfg. Co., 314-16 S. Third Ave., Marshalltown, Iowa.

Miller & Son Co., Geo. B., Waterloo, Iowa. "Bluebird."

Stanley Insulating Co., 43 Exchange Pl., New York, N. Y. "Ferrostat."

Therm-a-Jug Co., Webster City, Iowa.

BOUQUET HOLDERS—See Holders, Bouquet

BOW CLAMPS—See Holders, Top

BOW CLAMPS FOR FORDS—See Clamps, Top Bow

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BOW DRESSING MACHINES—See Machines, Top Bow Dressing

BOW HOLDERS—See Holders, Top

BOW RESTS—See Rests, Bow

BOW SEPARATORS—See Separators, Bow

BOW SOCKETS—See Sockets, Bow

BOWS, Top

Acme—See Starr, D. H.

Brown & Co., S. N., 111 Commercial St., Dayton, O.

Campbell & Dann Mfg. Co., Tullahoma, Tenn.

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

Delphos Bending Co., 905 S. Main St., Delphos, O.

Empire—See Skeens Empire Bending Works.

Hanover Bending & Mfg. Co., Factory St., Hanover, Pa.

Lebzelter & Son Co., Philip, 241 N. Queen St., Lancaster, Pa.

Mengel Co., Louisville, Ky.

Metropolitan Bending Co., Metropolis, Ill.

Milliken, Geo. W., Muncie, Ind.

Mossman, Yarnelle & Co., Pearl St., Fort Wayne, Ind.

Shepard & Sons, H. G., James & River Sts., New Haven, Conn.

Skeens Empire Bending Works, 114 S. Christian St., Lancaster, Pa. "Empire."

Starr, D. H., Highland, N. Y. "Acme."

Steelclad Auto Bow Co., Holland, Mich.

Stoll Bros., 545-47 N. Market St., Lancaster, Pa.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.)

(See page 81.)

Union Bow Co., 725-35 Superior Ave., N. W., Cleveland, O.

Wayne Steering Wheel & Bow Co., Wayne, Mich.

Wheel & Wood Bending Co., 141 John St., Bridgeport, Conn.

BOWS, TOP CONVERTING—See Converters, Top

BOX LOCKS—See Locks, Cabinet and Pad; also Catches, Spring

BOX PROTECTORS FOR FORDS—See Protectors, Coil Box

BOXES, BATTERY—See Boxes, Metal Battery; also Boxes, Wood Battery

BOXES, BATTERY, FOR FORDS—See Boxes, Tool

BOXES, COIL—See Boxes, Spark Coil

BOXES, CURB—See Boxes, Standard and Curb

BOXES, HOSE—See Boxes, Standard and Curb

BOXES, LUNCH—See Hampers, Touring

BOXES, Metal Battery

(For carrying battery on running board of car)

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Cornwall Mfg. Co., Cleveland, O. (See page 845.)

Detroit Auto Specialty Co., 6209 Greenwood Ave., Detroit, Mich.

Dunham Co., Thos., Aurora, Ill. (See page 145.)

F-B Electric & Mfg. Co.—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.)

(See pages 491 to 494.)

Globe Machine & Stamping Co., Cleveland, O. (See page 155.)

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.

Merts Mfg. Co., John, Water & Decatur Sts., Sandusky, O.

Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

Morrison & Sons, Frank, 1330 W. 11th St., Cleveland, O.

Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.

Pandolfo Mfg. Co., St. Cloud, Minn.

Tipton Mfg. Co., Tipton, Ia. "Tip Top." (See page 153.)

Tip Top—See Tipton Mfg. Co.

Vicksburg Battery Co., Vicksburg, Mich.

Victor—See Corcoran-Victor Co.

Wemaco—See Western Metal Specialty Co.

Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemaco."

BOXES, Metal Battery, for Fords

(For carrying battery on running board of car)

Brumac—See Bruun-McClure Co.

Bruun-McClure Co., 311 Cleveland Ave., Columbus, O. "Brumac."

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

General Auto Specialty Co., 151 Berkeley St., Boston, Mass. (Sole Distributors for Putney & Conant, Contocook, N. H.)

Globe Machine & Stamping Co., Cleveland, O. (See page 155.)

Hastings Mfg. Co., 36 E. Mill St., Hastings, Mich. (See page 521.)

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Long Life—See Willcutts Co.

Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

U. S. Auto Equipment Co., Milwaukee & Michigan Sts., Milwaukee, Wis.

Victor—See Corcoran-Victor Co.

Willcutts Co., H. D., 915 Washington St., Indianapolis, Ind. "Long Life."

BOXES, Metal Tool

(For Tool Bags—See Bags, Tool)

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Cornwall Mfg. Co., Cleveland, O. (See page 845.)

Derby Coppersmithing & Sheet Metal Contracting Co., First & Carolina Sts., Derby, Conn.

Detroit Auto Specialty Co., 6209 Greenwood Ave., Detroit, Mich.

Dow Co., Louisville, Ky. (See page 157.)

Gem Stamped Steel Co., 16 Beach St., Everett, Mass.

Everything is listed under the NOUN or principal word

TIP TOP TIPTON PRODUCTS

A Line of Accessories and Shop Tools that means
Increased Profits and Efficiency for You -

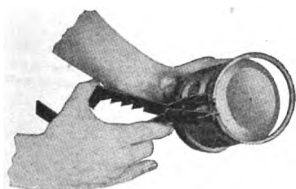


TIP TOP TIPTON
BATTERY BOX For Ford Cars

TIPTON PRODUCTS represent value—value in mechanical perfection and value in the efficient service they give. Tipton Products consist of a line of automobile accessories and shop tools designed to fill a specific and recognized need and they may be counted upon to deliver a service comparable to none.

The Tipton Battery Box for Ford Cars is a 22-gauge sheet steel box electrically welded. The cover is fastened by means of wing nuts and cannot come in contact with terminals. Cable openings arranged to fit all makes of batteries. Heavily coated with black, acid-proof paint. Easily installed, rattle-proof.

List Price \$3.00



The Tipton Piston Inserter is one of the most useful time and labor-saving tools ever made for the repairshop. It enables you to quickly insert a piston equipped with any make of rings and you can't injure the rings or your fingers, or score the cylinder. Can be used for top or bottom of cylinder.

Made in 4 sizes for all motors:

No. 1. 2 3/4 to 3 1/4 \$2.00

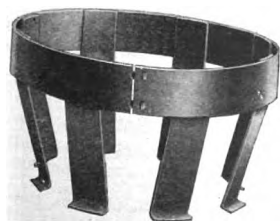
No. 2. 3 1/4 to 3 3/4 2.00

No. 3. 3 3/4 to 4 1/4 2.00

No. 4. 4 1/4 to 4 3/4 2.00

Complete set of four packed in one carton 8.00

Special Ford Type 2.00



TIP TOP TIPTON
PISTON INSERTER

The Tipton Piston Ring Tool is a time saving two-purpose tool—for removing and replacing piston rings and for removing carbon from the ring grooves. With this tool you can't break or spring the rings or injure your hands. Strongly made; black enameled.

List Price \$2.00

Order thru your jobber today. If he can't supply you, write to us direct

THE TIPTON MANUFACTURING CO.
Tipton, Iowa

BOXES, Metal Tool (Continued)

Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
 Gray Specialty Co., 148 Avon Ave., Newark, N. J.
 Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.
 Johnson Mfg. Co., 1011 S. 12th St., Omaha, Neb.
 Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
 Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
 Molsson Mfg. Co., 81 Huger St., Charleston, S. C.
 Pandolfo Mfg. Co., St. Cloud, Minn.
 Victor—See Corcoran-Victor Co.

BOXES, Metal Tool, for Fords

Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O. "Peerless."
 Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
 Hayes Mfg. Co., 4430 Maybury Grand Ave., Detroit, Mich.
 Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
 Peerless—See Corcoran Mfg. Co.

BOXES, Paper

St. Louis Paper Can & Tube Co., Maplewood Station, St. Louis, Mo.
 (See page 157.)

BOXES, Sheet Metal Tote

(Shop Boxes and Barrels)

Acme Sheet Metal & Mfg. Co., 2343 Lakeside Ave., Cleveland, O.
 All-Steel-Equip Co., 150 John St., Aurora, Ill.
 Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.
 Durlach Can & Iron Works, 234 Bridge St., Brooklyn, N. Y.
 Hetts Co., Dime Bank Bldg., Detroit, Mich.
 Kilbourne & Jacobs Mfg. Co., Columbus, O.
 Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Leestonia Boiler Co., Leestonia, O.
 Lupton's Sons Co., David, Allegheny Ave. & Tulp St., Philadelphia, Pa.
 (See page 677.)
 Lyon Metallic Mfg. Co., Montgomery St., Aurora, Ill.
 Manufacturing, Equipment & Engineering Co., Framingham, Mass. "Mecco."
 Mecco—See Manufacturing, Equipment & Engineering Co.
 N. B.—See New Britain Machine Co.
 New Britain Machine Co., Chestnut St., New Britain, Conn. "N. B."
 Ohio Mfg. Co., State & Sanford Sts., Painesville, O.
 Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis.
 Sterling Wheelbarrow Co., 64th & Pullen Aves., Milwaukee, Wis.

BOXES, SPARE LAMP BULB—See Cases, Extra Lamp Bulb

BOXES, Spark Coil

Churchill Cabinet Co., 2119 Churchill St., Chicago, Ill.
 Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.
 West Division, F. M.—The New England Box Co., 225 Liberty St., Springfield, Mass.

BOXES, SPRING OILING—See Cups, Spring Leaf Lubricating

BOXES, Standard and Curb

(For installing at curb for free air and water service)

Auto Camp Stove Co., 1420 Cass St., Fort Wayne, Ind.
 Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.
 Eco—See Western Mfg. Co.
 Hale Electric & Engineering Co., Cleveland, O. (See page 155.)
 Kauffman Metal Products Co., Bellefontaine, O. "Logan." (See page 359.)
 Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
 Logan—See Kauffman Metal Products Co.
 Midvale Machine Works—See Wesco Supply Co.
 Romort Mfg. Co.—See Zinke Co.
 Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 847.)
 Wesco Supply Co., Seventh St. & Clark Ave., St. Louis, Mo. (Sole Distributors for Midvale Machine Works, St. Louis, Mo.)
 Western Mfg. Co., Sixth Ave., E. & S. Third St., Okaloosa, Ia. "Eco."
 Williams-Loper, 11 Ohio St., Oshkosh, Wis.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.)
 (See pages 772 and 773.)

BOXES, Storage Battery

Hartzell Walnut Propeller Co., Piqua, O.
 Indianapolis Wood Products Co., Lombard Bldg., Indianapolis, Ind.
 McLean Storage Battery Co., 721 Frankfort St., Cleveland, O.
 Mengel Co., Louisville, Ky.
 Merz & Son, G., 112-18 W. Superior St., Chicago, Ill. (See page 155.)

BOXES, TOOL—See Boxes, Metal Tool; also Boxes, Wood Tool

BOXES, TOTE—See Boxes, Sheet Metal Tote

BOXES, Wood Battery

(For carrying battery on running board of car)
 Churchill Cabinet Co., 2119 Churchill St., Chicago, Ill.
 Gillette Motor Products Corp., Howard City, Mich.
 Mengel Co., Louisville, Ky.
 Merz & Son, G., 112-18 W. Superior St., Chicago, Ill. (See page 155.)
 Sisman Co., Andrew C., 1221 Beaufault Ave., Detroit, Mich.
 Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.
 Taggart & McKinney, Milford, Mich.
 West Division, F. M.—The New England Box Co., 225 Liberty St., Springfield, Mass.

Everything is listed under the NOUN or principal word

Metal Tool and Battery Boxes



Manufactured by us are GOOD Boxes—not cheap ones. Boxes of equal quality can't be produced and sold for less.

GLOBE Boxes have for years been the recognized standard of quality—that's why we produce most of the automobile boxes sold.

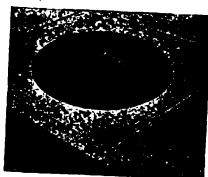
All leading jobbers and dealers handle GLOBE Boxes. Do you?

The Globe Machine & Stamping Co.
CLEVELAND OHIO

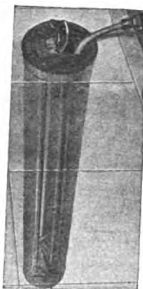
World's Largest Manufacturer of Metal Tool and Battery Boxes

HALE CURB BOXES

ARE



AIR HOSE RETRIEVERS



They keep the hose out of the way and out of sight at all times and do it AUTOMATICALLY NOTHING TO RUN INTO NOTHING TO STUMBLE OVER HOSE ALWAYS ACCESSIBLE For the Garage floor or sidewalk at curb.

The Hale Electric and Engineering Co.
Manufacturers of automatic motor-driven air compressors and all appurtenances.
CLEVELAND, O. U. S. A



How to Make the Business Profitable

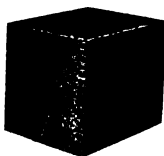
Every service station, repair shop and garage needs our book: "Standardized Service Accounting." This system is easy to install. When adapted and followed the exact working of the system creates confidence in the customer and puts your business on a cash basis. It deflates your Used-Car appraisals and makes your employees better, more productive workers. It operates your shop economically and to your profit, and gains for you the respect of your Banker. Price on application.

Motor Car Service Bureau, Inc.

Standardized Service Accounting
Centralized Purchasing Bureau

2627 John R. St.

Detroit, Mich.



BOXES

G. MERZ & SON

112-118 West Superior St.
CHICAGO, ILL.

Manufacturers of All Styles of

Lock Corner Boxes

such as

Battery, Wrench, Auto Parts
and

Accessories,
and Fancy
Varnished

BOXES



Please mention The Automobile Trade Directory

BOXES, Wood Tool*(For Tool Bags—See Bags, Tool)*

Only Grease Gun Co., Newton, Iowa.

Platt-Rubin Co., 2522-26 S. Western Ave., Chicago, Ill.

Standard Cabinet Mfg. Co., El Canal St., Peru, Ind.

West Division, F. M.—The New England Box Co., 225 Liberty St., Springfield, Mass.

BOXES, Wrench and Small Tool

Mers & Son, G., 112-18 W. Superior St., Chicago, Ill. (See page 155.)

BRACES, Drive Shaft Housing, for Fords

Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Ekern-Turk Mfg. Co., Pipestone, Minn.

Stewart, C. F., Wichita, Kan.

BRACES, FENDER, FOR FORDS—See Braces, Mud Guard**BRACES, HOUSING FOR FORDS—See Braces, Drive Shaft Housing****BRACES, Mud Guard or Fender, for Fords***(Small metal clamps for fastening mud guard and apron together to prevent rattling)*

BB—See Bayne Mfg. Co.

Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 149.)

Bracefords—See Prince Mfg. Co.

Dunford—See Dunn Mfg. Co.

Dunn Mfg. Co., 115 N. 15th St., Clarinda, Ia. "Dunford."

Gahm-McCormick Co., 806 E. Main St., Streator, Ill. (See page 171.)

I-NE-DA Fender Brace Mfg. Co., 524 Southwest Blvd., Rosedale, Kans.

Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Prince Mfg. Co., 6 Liberty Ct., Sumter, S. C. "Bracefords."

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 759.)

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

BRACES, Running Board, for Fords*(Fittings to reinforce or supplement the running board hangers to eliminate sagging of the running boards)*

American Simplex Co., 2101 W. 16th St., Anderson, Ind. "Simplex."

Apco Mfg. Co., 703 Eddy St., Providence, R. I.

BB—See Bayne Mfg. Co.

Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.

Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 149.)

Bear Mfg. Co., Rock Island, Ill. (See page 405.)

Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.

Bracefords—See Prince Mfg. Co.

Brewer Tichener Corp., Cortland, N. Y.

Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Bull Dog—See Thomas Mfg. Co.

C. M. & D.—See Chicago Mfg. & Distributing Co.

Casey Asco Mfg. Co., 1504 Grand Ave., Kansas City, Mo.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)

Dow Co., Louisville, Ky. (See page 157.)

Dunham Co., Thos., Aurora, Ill.

(See page 145.)

Ekern-Turk Mfg. Co., Pipestone, Minn.

Franklin Mfg. Co., 354 Mortimer St., Buffalo, N. Y. (See page 643.)

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Distributors.)

(See pages 560 to 574.)

Gahm-McCormick Co., 806 E. Main St., Streator, Ill. (See page 171.)

General Mfg. Co., Hagerstown, Md.

H-K—See Hall Air Lock & Railway Supply Co.

Hall Air Lock & Railway Supply Co., Oakville, Iowa. "H-K."

Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto."

(See page 503.)

Midway Mechanical Co., St. Paul, Minn.

Presto—See Metal Specialties Mfg. Co.

Prince Mfg. Co., 6 Liberty Ct., Sumter, S. C. "Bracefords."

Simplex—See American Simplex Co.

Standley Skid Chain Co., Boone, Iowa. (See page 465.)

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 759.)

Star-K—See Stark-Inland Machine Works.

Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."

Stoll Mfg. Co., 1250 Larimer St., Denver, Colo.

Thomas Mfg. Co., W. H. Spencer, Ia.

"Bull Dog." (See page 572.)

Vaughn-Harris Co., Vermillion, S. Dak.

W-A—See Whetstone & Co.

Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

Williams Wagon Works, Third St., Macon, Ga.

BRACES, Steering Column, for Fords*(Brace to attach to dashboard to steady steering column)*

Apco Mfg. Co., 703 Eddy St., Providence, R. I.

Holtum Mfg. Co., Freeport, Ill.

(See page 903.)

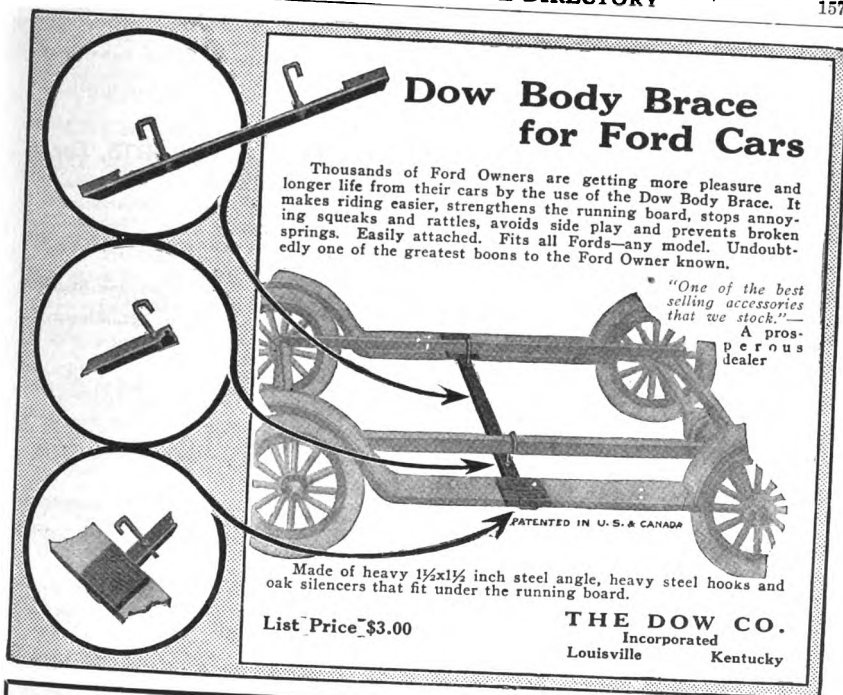
Tungsten Mfg. Co., Marshalltown, Ia.

(See page 647.)

BRACKETS, Automatic Headlight*(Interconnected with steering gear or operated from dashboard so as to turn headlights with front wheels and illuminate the road around turn ahead of car)*

Cincinnati Auto Lamp Co., Cincinnati, O.

Everything is listed under the NOUN or principal word



Dow Body Brace for Ford Cars

Thousands of Ford Owners are getting more pleasure and longer life from their cars by the use of the Dow Body Brace. It makes riding easier, strengthens the running board, stops annoying squeaks and rattles, avoids side play and prevents broken springs. Easily attached. Fits all Fords—any model. Undoubtedly one of the greatest boons to the Ford Owner known.

* "One of the best selling accessories that we stock."—
A prosperous dealer

PATENTED IN U. S. & CANADA

Made of heavy $1\frac{1}{2} \times 1\frac{1}{2}$ inch steel angle, heavy steel hooks and oak silencers that fit under the running board.

List Price \$3.00

THE DOW CO.
Incorporated
Louisville Kentucky



Patch Boxes for Marketing Cold Patches

The illustration shows the popular tin screw-cap metal bottom fibre body patch boxes which we carry in stock in the several sizes used by the TIRE ACCESSORY TRADE for cold patches. These are very convenient and durable and are a great seller. Prompt deliveries. Samples and quotations furnished on request. In writing us, please mention dimensions and quantities wanted.

We also make buffers

St. Louis Paper Can & Tube Co. Maplewood Station St. Louis, Mo.

REPLACEMENT PARTS—AUTOMOTIVE PRODUCTS MANUFACTURERS—DISTRIBUTORS

Bevel Gears—Pinions
Spiral—Straight Tooth
Rear Axle Shafts
Transmission Gears and
Shafts—Piston Pins
Ball—Roller Bearings
Magneto—Coil Parts
Motor—Generator Brushes



Screw Machine Products
Perfection Timing Gears
Kwik-Ak-Shun Bearing Compound
The Spark Mixture
Control for Fords
Hi-Power Spark
Plugs—Manifolds
Ford Parts

Your Inquiries Solicited

UNIVERSAL AUTO PARTS CO.

268 Nartilla Street PORTLAND, OREGON

Please mention The Automobile Trade Directory

BRACKETS, Automatic Headlight (Continued)

Culver-Stearns Mfg. Co., 58 Grafton St., Worcester, Mass.
 Dempsey Co., James E., 406 State St., Manitowoc, Wis. "Jed-Ray."
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Brackets.) (See page 429.)
 Hofweber Mfg. Co., 121 S. Front St., La Crosse, Wis.
 Jed-Ray—See Dempsey Co.
 Pennock—See Specialty Mfg. Co.
 Specialty Mfg. Co., Minerva, O. "Pennock."
 Wilcox Patents, Chicago Savings Bank Bldg., Chicago, Ill.

BRACKETS, Automatic Headlight, for Fords

(Interconnected with steering gear or operated from dashboard so as to turn headlights with front wheels and illuminate the road around turn ahead of car)

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 Howes Automatic Headlight Co., 2721 S. Michigan Ave., Chicago, Ill. (See page 181.)
 Ospeco—See Michigan Auto Products Co.
 Reliance Spring & Mfg. Co., 3905 Second Ave., Brooklyn, N. Y.

BRACKETS, Stationary Headlight

Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.

BRACKETS, HEADLIGHT, FOR FORDS— See Brackets, Automatic Headlight

BRACKETS, Side and Tail Lamp

Bremner & Terris Mfg. Co., 137-41 S. Albany Ave., Chicago, Ill.
 Brewer Tichener Corp., Cortland, N. Y.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Douglas Auto-Apppliance Co., 2845 Chicago Ave., Minneapolis, Minn.
 Eberhard Mfg. Co., 2784 Tennyson Rd., Cleveland, O.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Konigsow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 National—See Pratt Mfg. Co.
 Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill. "National."
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Strieby & Foote Co., 301 Ogden St., Newark, N. J.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)

BRACKETS, Timer Elevating, for Fords

Accurate—See Safstrom Mfg. Co.
 Mill City Co., Minneapolis, Minn.
 Milwaukee Air Power Pump Co., 886 Third St., Milwaukee, Wis. "Sta Kleen."

Safstrom Mfg. Co., 6706 S. Chicago Ave., Chicago, Ill. "Accurate."
 Sta-Kleen—See Milwaukee Air Power Pump Co.
 Thomas-Andrews Corp., Waukegan, Ill.

BRACKETS or SUPPORTS, Engine Repair, for Fords

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Backus, C. R., Mystic, Conn. "Johnson."
 Fulton Co., 75th & National Aves., Milwaukee, Wis. (Distributors.) (See pages 569 to 574.)
 Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. (See page 167.)
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 933.)
 Jiffy—See Wagner Castings Co.
 Johnson—See Backus, C. R.
 Lake Erie Accessories Co., 1212-50 W. Sixth St., Cleveland O. "Master Hercules."
 Master Hercules—See Lake Erie Accessories Co.
 Reliable Motor Support Co., Creston, Iowa.
 Rich Mfg. Co., 69-71 Greene St., New York, N. Y.
 Simonsen Iron Works, Sioux Rapids, Ia. "Victory." (See page 573.)
 Simpson Mfg. Co., 205 W. Main St., Newark, O.
 Victory—See Simonsen Iron Works.
 Wagner Castings Co., 751 N. Lowber St., Decatur, Ill. "Jiffy."
 Wilkes-Barre Welding & Machine Co., 28-30 E. Ross St., Wilkes-Barre, Pa.

BRAKE ADJUSTERS—See Adjusters, Brake

BRAKE BAND ADJUSTERS FOR FORDS— See Adjusters, Brake and Reverse Band

BRAKE BAND RIVETING JIGS FOR FORDS—See Jigs, Brake Band Riveting

BRAKE BAND RIVETING MACHINES— See Machines, Brake Band Riveting

BRAKE BANDING FOR FORDS—See Lining, Brake

BRAKE BANDING CUTTERS—See Cutters, Brake Lining

BRAKE BANDS—See Brakes, Expanding and Contracting; also Lining, Brake

BRAKE CABLE—See Rope, Steel Wire

BRAKE COMPOUNDS—See Dressing, Brake

BRAKE DRUMS—See Drums, Brake

BRAKE EQUALIZERS FOR FORDS—See Equalizers, Brake

BRAKE EQUALIZERS, TRAILER—See Equalizers, Trailer Brake

BRAKE FACING—See Lining, Brake

BRAKE LINING—See Lining, Brake

BRAKE LINING CUTTERS—See Cutters, Brake Lining

BRAKE ROD ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Brake Rod; also Supports, Brake Rod

Everything is listed under the NOUN or principal word

BRAKE ROD GUIDES FOR FORDS—See
Supports, Brake Rod

BRAKE ROD SUPPORTS FOR FORDS—
See Supports, Brake Rod

BRAKE RODS—See Rods, Brake

BRAKE SHOES FOR FORDS—See Shoes,
Brake

BRAKES, Air

Christensen Engineering Co., 425 E. Water St.,
Milwaukee, Wis.

Parker Appliance Co., 2619 Vermont Ave.,
N. W., Cleveland, O.

Westinghouse Air Brake Co., Pittsburgh, Pa.

BRAKES, CONTRACTING—See Brakes,
Expanding and Contracting

BRAKES, CONTRACTING FOR FORDS—
See Brakes, Emergency Contracting

BRAKES, Electric

Hartford, Edward V., 35 Warren St., New
York, N. Y. (See page 765.)

BRAKES, Emergency Contracting.
for Fords

(Internal contracting band brakes designed to operate
on regular brake drum)

A-C Mfg. Co., 2251 W. Grand Ave., Chicago,
Ill.

Bennett Mfg. Co.—See Lathan Auto Supply
Co.

Clapp-Eastham Co., 139 Main St., Cambridge,
Mass. "Holdford."

Duplex—See Raybestos Co.

Holdford—See Clapp-Eastham Co.

Lathan Auto Supply Co., 1521-27 Van Ness
Ave., San Francisco, Cal. (Sole Distrib-
utors for Bennett Mfg. Co., Oakland, Cal.)

Master Auto Accessory Co., 1601 Michigan
Blvd., Chicago, Ill.

Master Service Co., 2205 S. Main St., Los
Angeles, Cal.

Moore—See Tractor-Train Co.

Pla Safe Brake Co., Brookville, Pa.

Raybestos Co., Bridgeport, Conn. "Ray-
mond," "Duplex." (See page 529.)

Raymond—See Raybestos Co.

Rischmuller Mfg. Co., 3442 19th St., San Fran-
cisco, Cal.

Rusco—See Russell Mfg. Co.

Russell Mfg. Co., Middletown, Conn.
"Rusco." (See page 530.)

Tractor-Train Co., 1344 Wall St., Los
Angeles, Cal. "Moore." (See page 413.)

**BRAKES, Expanding and Contract-
ing**

Duplex—See Raybestos Co.

Landry Mfg. Co., 50 Nye St., New Bedford,
Mass.

Raybestos Co., Bridgeport, Conn. "Ray-
mond," "Duplex." (See page 529.)

Raymond—See Raybestos Co.

BRAKES, Hydraulic

Courtesy Service & Sales Co., 1302 S.
Wabash Ave., Chicago, Ill. (Illinois
Distributors for Four Wheel Brakes.)
(See page 197.)

Four Wheel Hydraulic Brake Corp., 700
Harper Ave., Detroit, Mich.

BRAKES, SPRAG FOR FORDS—See Stops,
Ratchet

BRASS CASTINGS—See Castings, Bronze
and Brass

BRASS CHECKS—See Checks, Brass Time,
Tool and Pay

BRASS HAMMERS—See Hammers, Soft
Metal

BRASS, IRON LINED TUBING—See Tub-
ing, Iron Lined

BRASS MALLET—See Hammers, Soft
Metal

BRASS MELTING FURNACES—See Fur-
naces, Brass Melting

BRASS RADIATOR CAPS—See Caps,
Brass Radiator

BRASS RIVETS—See Rivets, Brass

BRASS, ROD—See Brass and Copper, Sheet
and Rod

BRASS, SHEET—See Brass and Copper,
Sheet and Rod

BRASS TESTING INSTRUMENTS—See In-
struments, Metal Testing

BRASS TUBING—See Tubing, Brass

BRASS and COPPER, Sheet and Rod

(For Tubing—See Tubing, Brass; for Castings—See
Castings, Brass and Bronze)

American Brass Co., Waterbury, Conn.
(See page 161.)

American Brass Co. (Kenosha Branch), Ken-
osha, Wis.

Baltimore Tube Co., 1301 Wicomico St., Balti-
more, Md.

Bridgeport Brass Co., Bridgeport, Conn.

Buffalo Copper & Brass Rolling Mill, Military
Rd. & Hertel Ave., Buffalo, N. Y.

Chase Rolling Mill Co., Grand St., Waterbury,
Conn.

Cleveland Brass & Copper Mills, Cleveland, O.

Continuous Rolling Mills of the Continuous
Casting Corp., Garwood, N. J.

Detroit Copper & Brass Rolling Mills, Clark
Ave. & Wabash R. R., Detroit, Mich.

International Nickel Co., 43 Exchange Pl.,
New York, N. Y. "Monel Metal."

Manhattan Brass Co., 328 E. 28th St., New
York, N. Y.

Michigan Copper & Brass Co., 5851 W. Jeffer-
son Ave., Detroit, Mich. "Wolverine."

Monel Metal—See International Nickel Co.

New Haven Copper Co., Seymour, Conn.

New Jersey Tube Co., Kingsland Ave., Harri-
son, N. J.

Randolph-Clowes Co., 384 Bank St., Water-
bury, Conn.

Everything is listed under the NOUN or principal word

BRASS AND COPPER, Sheet and Rod (Continued)

Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.
 Seovill Mfg. Co., Waterbury, Conn. (See page 745.)
 Seymour Mfg. Co., 87 Franklin St., Seymour, Conn.
 Somers Co., 95 Baldwin Ave., Waterbury, Conn.
 Stamford Rolling Mills Co., 347 Madison Ave., New York, N. Y.
 Taunton-New Bedford Copper Co., Taunton, Mass.
 Waukesha Foundry Co., Lincoln Ave., Waukesha, Wis.
 Winchester Brass & Copper Co., Meadow St., Winsted, Conn.
 Wolverine—See Michigan Copper & Brass Co.

BRAZIERS, CAST IRON—See Welding, Autogenous

BRAZING COMPOUNDS—See Compounds, Brazing

BRAZING FLUX—See Compounds, Brazing

BRAZING TORCHES—See Torches, Gasoline; also Torches, Acetylene; also Machines, Autogenous Welding

BREAST DRILLS—See Drills, Breast

BREATHER PIPES FOR FORDS—See Breathers, Crank Case

BREATHERS, Crank Case, for Fords

(Breather pipe with large filler opening to take the place of steel cap on small oil filling hole on front end of motor)

Apco Mfg. Co., 708 Eddy St., Providence, R. I.
 Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.
 Bowen Products Corp., Auburn, N. Y. "Empress." (See page 313.)
 Dunham Co., Thom., Aurora, Ill. (See page 145.)
 Empress—See Bowen Products Corp.
 Excelsior Auto Parts & Supply Co., Hartford, Conn. (See page 163.)
 Greer, Fredric, 2437 Michigan Ave., Chicago, Ill.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.
 Vortex Mfg. Co., 105 W. Commercial St., Pomona, Cal.

BROACHING MACHINES—See Machines, Broaching

BROACHING PRESSES—See Machines, Broaching

BROADCLOTH, Upholstery

(See also Trimmings, Cloth and Carpet)

American Mills Co., 395 Broadway, New York, N. Y.
 American Woolen Co. of N. Y., 225 Fourth Ave., New York, N. Y.
 Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. "Sealtex." (See page 165.)

Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. (See page 305.)
 Laidlaw Co., 16 W. 60th St., New York, N. Y. (See pages 269 and 273.)
 Roy Woolen Co., 500 Broadway, Watervliet, N. Y.
 Sealtex—See Bradford Fabrics Co.
 Seaco—See Seamans & Cobb Co.
 Seamans & Cobb Co., 140 Essex St., Boston, Mass. "Seaco."
 Slater & Sons, Webster, Mass.
 Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 257.)
 Strongtex—See Strong Textile Co.
 Terhune, Yereance & Wolf, 215 Fourth Ave., New York, N. Y. (Mill Agents.) (See page 303.)
 Waterloo Woolen Mfg. Co., 228 E. Main St., Waterloo, N. Y.

BROKERS and BANKERS, Financial

(Covering only Brokers and Bankers who Advertise in this Publication)

Continental Guaranty Corp., 248 Madison Ave., New York, N. Y. (See page 343.)

BRONZE-BACKED BEARINGS—See Bearings and Bushings

BRONZE-BACKED BUSHINGS—See Bearings and Bushings

BRONZE, BEARING—See Metals, Bearing

BRONZE BUSHINGS—See Bushings, Bronze; also Metals, Bearing

BRONZE CASTINGS—See Castings, Bronze and Brass

BRONZE PAINTS—See Paints, Aluminum

BRONZE ROPE—See Rope, Bronze Wire

BRONZE TESTING INSTRUMENTS—See Instruments, Metal Testing

BRONZE WIRE ROPE—See Rope, Bronze Wire

BROOMS, Steel Wire

(For cleaning garage and shop floors)

American Wire Brush Co., 202-04 Centre St., New York, N. Y. "Minerva."
 Minerva—See American Wire Brush Co.
 Osborn Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.

BRUSH SANDERS, GENERATOR FOR FORDS—See Sanders, Generator Brush

BRUSHES, CAR WASHING—See Washers, Vehicle

BRUSHES, GENERATOR—See Brushes, Magneto

BRUSHES, Magneto, Starter and Generator

(Carbon, Metal and Woven Wire)

A. C. Ignition Co., Marquette Bldg., Detroit, Mich.
 American Carbon & Battery Co., East St. Louis, Ill.

Everything is listed under the NOUN or principal word

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Racine Demountable Winter Tops

ANCHOR TOP AND BODY CO.
Anchor Demountable Tops

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FACTURING CO.

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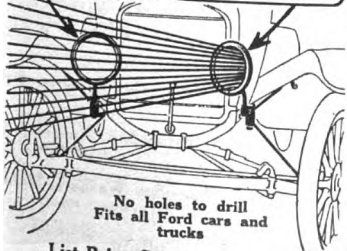
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TO LIGHT INSIDE OF
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Kenosha Branch

Kenosha, Wis.

Buffalo Branch

Buffalo, N. Y.

Torrington Branch

Torrington, Conn.

Waterbury Branch, Waterbury, Conn.

OFFICES, STORES AND RESIDENT AGENTS

New York, N. Y., 195 Broadway
Chicago, Ill., 29 East Madison St.
Boston, Mass., 201 Devonshire St.
Providence, R. I., 131 Dorrance St.
Cincinnati, Ohio, 1026 Union Central Bldg.
Cleveland, Ohio, 1118 Citizens Bldg.
Philadelphia, Pa., 1401 Widener Bldg.
Pittsburgh, Pa., 904 Union Bank Bldg.
Detroit, Mich., 455 Book Bldg.
San Francisco, Cal., 412-414 Balfour Bldg.
St. Louis, Mo., Security Bldg.

Please mention The Automobile Trade Directory

BRUSHES, Magneto, Starter and Generator (Continued)

Arrow—See Niehoff & Co.
 Bay State Research & Mfg. Co., 170 Third St., Chelsea, Mass.
 Becker Bros., 23-31 N. Jefferson St., Chicago, Ill.
 Bee Cee—See Brown & Caine.
 Brown & Caine, 2317-21 Calumet Ave., Chicago, Ill. "Bee Cee."
 (See page 271.)
 Carballoy Products Co., Bellevue, O.
 Cartung Research & Mfg. Co., 160 John St., Brooklyn, N. Y.
 Chapin Co., Chas. E., 201 Fulton St., New York, N. Y.
 Colebaugh Self Lubricating Carbon Co., 1503 Columbia Ave., Philadelphia, Pa. "No-Spark."
 Columbia—See National Carbon Co.
 Corliss Carbon Co., Bradford, Pa.
 Ebco—See Electric Brush Co.
 Electric Brush Co., Dover, N. J. "Ebco."
 Gillfillan Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.
 Graphalloy—See Graphite Metallizing Corp.
 Graphite Metallizing Corp., 1050 Nepperhan Ave., Yonkers, N. Y. "Graphalloy."
 Graphite Products Co., 5155 Wakefield St., Philadelphia, Pa.
 Guaranteed Magneto Parts Co., 210 W. 54th St., New York, N. Y.
 (See page 613.)
 Jeandron, W. J., 172 Fulton St., New York, N. Y. (Importer.) "Le Carbone."
 Lance Mfg. Co., 247 Centre St., New York, N. Y.
 Le Carbone—See Jeandron, W. J.
 Millwood-Brackett Co., Des Moines, Iowa.
 (See page 327.)
 National Carbon Co., Cleveland, O.
 "Pyramid." (See page 163.)
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. "Arrow."
 (See page 325.)
 No-Spark—See Colebaugh Self Lubricating Carbon Co.
 Ohio Carbon Co., 8219 Almira Ave., Cleveland, O.
 Otter Mfg. Co., 243 W. 17th St., New York, N. Y.
 Pyramid—See National Carbon Co.
 Speer Carbon Co., Theresa St., St. Marys, Pa. (See page 163.)
 Stackpole Carbon Co., St. Marys, Pa.
 Standard Motor Products Co., 81 Tenth St., Long Island City, N. Y.
 U. S. G.—See United States Graphite Co.
 United States Graphite Co., Saginaw, Mich. "U. S. G."
 Universal Auto Parts Co., 268 Natilla St., Portland, Ore. (Distributors.) (See page 167.)
 Universal Carbon Co., First St. & Riverside Ave., Dundee, Ill.

BRUSHES, Paint and Varnish

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.
 Boars Head—See Fisher-Mitchell Co.
 Bowditch, John F., 166 Commercial St., Boston, Mass.
 Bradley & Smith, 251 Pearl St., New York, N. Y.
 Burton & Co., A. E., 75 Pearl St., Boston, Mass.

Clinton & Co., E., 2119 Arch St., Philadelphia, Pa.
 Devos & C. T. Reynolds Co., F. W., 101 Fulton St., New York, N. Y.
 Eclipse Air Brush & Compressor Co., 79 Orange St., Newark, N. J.
 Fisher-Mitchell Co., 186 Mitchell St., New York, N. Y. "Boars Head."
 Gerts, Lumbard & Co., 154 W. Randolph St., Chicago, Ill.
 Hanlon & Goodman Co., 270-72 Pearl St., New York, N. Y.
 Miles Bros. & Co., 1957-67 Pitkin Ave., Brooklyn, N. Y.
 Packard Co., A., 166 Commercial St., Boston, Mass.
 Rinshed-Gogriker Co., 164-68 Congress St. E., Detroit, Mich.
 Rubberset Co., 56 Ferry St., Newark, N. J.
 Thayer & Co., P. E., Pawtucket, R. I.
 Thum, Chas. D., 150 N. Third St., Philadelphia, Pa.
 United Brush Manufactories, 203-05 Lafayette St., New York, N. Y.
 Whitting-J. J. Adams Co., John L., Boston, Mass. (See page 165.)

BRUSHES, Spark Plug

(Small Wire or Bristle Brushes for cleaning Spark Plugs)

American Wire Brush Co., 302-04 Centre St., New York, N. Y.
 North Ridge Brush Co., 252 Clark St., Freeport, Ill.
 Osborn Mfg. Co., 5401 Hamilton Ave., N. E., Cleveland, O.

BRUSHES, STARTER—See Brushes, Magneto.

BRUSHES, Timer, for Fords

Hartland Co., 1974 Broadway, New York, N. Y.
 Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa.
 Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Never Miss."
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Beaver St., Waltham, Mass. "Mosco."
 Never Miss—See Mil-Mac Mfg. Co.
 Redmond—See Riverside Specialty Works.
 Riverside Specialty Works, Riverside, Cal. "Redmond."
 Rush & Co., W. S., 108 N. Daly St., Los Angeles, Cal.

BRUSHES, VARNISH—See Brushes, Paint and Varnish

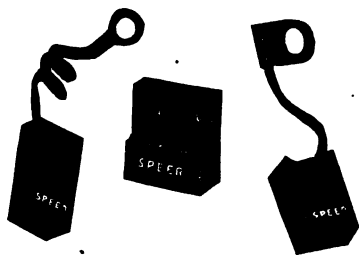
BRUSHES, WASHING—See Washers, Vehicle

BRUSHES, WHEEL—See Washers, Vehicle

BRUSHES, Wire Buffing

Auto-Tire Vulcanizing Co., 140 Powell St., Lowell, Mass. "Harrison."
 Auto Tool Co., 532 Boston Blk., Minneapolis, Minn. "Roto."
 Ferro—See Ferrodowill Mfg. Co.
 Ferrodowill Mfg. Co., 214 W. Indiana Ave., St. Paul, Minn. "Ferro."
 Harrison—See Auto-Tire Vulcanizing Co.
 Herold Mfg. Brush Co., Cleveland, O.

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BRUSHES, Wire Buffing (Continued)

Luther Grinder Mfg. Co., Milwaukee, Wis.
 Milwaukee Brush Co., Milwaukee, Wis.
 Osborn Mfg. Co., 5401 Hamilton Ave., N. E.,
 Cleveland, O.
 Roto—See Auto Tool Co.

BUCKETS, Collapsible

(Collapsible or folding pails or buckets for carrying in car for filling radiators)

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)
 Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.
 Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich.
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)
 Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
 Bemco—See B. E. Mfg. Co.
 Boko—See Defiance Welding Co.
 Brewster Auto Necessity Co., 28 E. Fulton St., Gloversville, N. Y.
 Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo. "Duplex."
 Defiance Welding Co., Defiance Bldg., Defiance, O. "Boko."
 Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."
 Duplex—See Planet Co.
 Duplex—See Burch Mfg. Co.
 Esco—See Economy Seat Co.
 Faultless—See National Mfg. Co.
 Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O.
 Hinson—See Powers Mfg. Co.
 Martin Mfg. Co., 317 Forest Rose Ave., Lancaster, O.
 National Mfg. Co., 101 S. E. Fifth St., Des Moines, Iowa. "Faultless."
 Planco—See Planet Co.
 Planet Co., 180 N. Elm St., Westfield, Mass. "Duplex," "Planco."
 Powers Mfg. Co., Waterloo, Ia. "Hinson." (See page 530.)
 R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E."
 Schaefer Tent & Awning Co., 1421-23 Larimer St., Denver, Colo.
 Whitall-Tatum Co., 46-48 Barclay St., New York, N. Y.

BUCKLES, Strap

Anchor—See North & Judd Mfg. Co.
 Auto-Vehicle Parts Co., 2201 Colerain Ave., Cincinnati, O. "Auveco."
 Auveco—See Auto-Vehicle Parts Co.
 Herman Mfg. Co., 1214 H St., N. W., Washington, D. C.
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

BUCKLES, TURN—See Turn-Buckles**BUFFERS, ELECTRIC PORTABLE—See Drills, Electric Portable****BUFFERS, TIRE—See Machines, Electric Tire Buffing****BUFFERS, Tube Patching**

(Small metal buffer to be used instead of sand-paper when preparing a tube for patching)

Cordell Mfg. Co., 709 Pine St., St. Louis, Mo.

BUFFING BRUSHES, WIRE—See Brushes, Wire Buffing**BUFFING COMPOUNDS—See Compounds, Buffing****BUFFING MACHINES, TIRE—See Machines, Electric Tire Buffing****BUILDINGS, PORTABLE—See Garages, Portable****BULB BOXES—See Cases, Extra Lamp Bulb****BULB CASES—See Cases, Extra Lamp Bulb****BULBS, HEADLIGHT—See Lamps, Miniature Incandescent****BULBS, HORN—See Bulbs, Rubber Horn****BULBS, INCANDESCENT LAMP—See Lamps, Miniature Incandescent****BULBS, LAMP—See Lamps, Miniature Incandescent****BULBS, Rubber Horn**

Alpha—See Parker, Stearns & Co.
 Davol Rubber Co., Providence, R. I.
 Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Mechanical Rubber Co., G. & P. & Nickel Plate R. R., Cleveland, O.
 Parker, Stearns & Co., 226 Sheffield Ave., Brooklyn, N. Y. "Alpha."
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 United States Tire Co., 1790 Broadway, New York, N. Y. (See page 863.)

BUMPERS, Automobile

(For protecting Lamps and Radiators; also for rear of car.)

Acme—See Clevenger Engineering & Sales Co.
 Ajusto—See Central Brass & Fixture Co.
 American Chain Co., Bridgeport, Conn. (See page 329.)
 American Metal Parts Mfg. Co., Milwaukee, Wis.
 American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.
 Asch & Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Halladay Bumpers.) (See page 247.)
 Au-To Compressor Co., 308 S. Mulberry St., Wilmington, O. "Oro."
 Autoguard—See Stewart-Warner Speedometer Corp.
 Badger Mfg. Corp., Milwaukee, Wis. "Simplex," "Protex," "Clover Leaf," "Fresto," "Shur-on," "De Luxe," "C.C." (See page 171.)
 Balcrank—See Cincinnati Ball Crank Co.
 Bell Safety Bumper Co., 68 34th St., Brooklyn, N. Y. (See page 168.)
 Bellevue Mfg. Co., Bellevue, O. (See page 169.)

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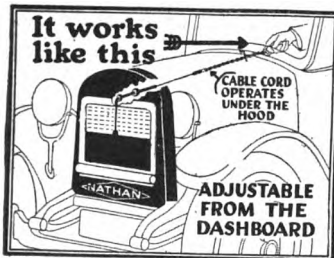


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BUMPERS, Automobile (Continued)

- Better—See New Era Spring & Specialty Co.
 Biflex Products Co., Waukegan, Ill.
 "Boulevard," "Crescent," "Traffic."
 (See page 169.)
 Boulevard—See Biflex Products Co.
 Bucks—See Central Brass & Fixture Co.
 Bull Dog—See Toledo Cable Co.
 Buttwell Bumper Co., 16 W. 61st St., New York, N. Y.
 C. C.—See Badger Mfg. Corp.
 C. G. Spring Co., Kalamazoo, Mich.
 "McGregor." (See page 794.)
 Cambria Spring Co., 216-18 S. Los Angeles St., Los Angeles, Cal.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye," "Champion," "Standard," "Ajusto."
 Champion—See Central Brass & Fixture Co.
 Champion—See Milwaukee Auto Engine & Supply Co.
 Cincinnati Ball Crank Co., Cincinnati, O. "Balerank." (See page 498.)
 Cleveland Engineering & Sales Co., 86 McKinley Pl., Edgewood, N. J. "Acme."
 Clover Leaf—See Badger Mfg. Corp.
 Columbus Auto Brass Co., Columbus, O. "Howe." (See page 381.)
 Conover—See New Jersey Tube Co.
 Conqueror—See Milwaukee Auto Engine & Supply Co.
 Cox Brass Mfg. Co., Albany, N. Y. "E-Z," "Endurance," "Hy-Lo." (See page 108.)
 Crescent—See Biflex Products Co.
 Defender Mfg. Co., 1002 S. Michigan Ave., Chicago, Ill.
 De Luxe—See Badger Mfg. Corp.
 Diamond—See Sager Co.
 E-Z—See Cox Brass Mfg. Co.
 Endurance—See Cox Brass Mfg. Co.
 Evelyn—See Southern Specialty Co.
 Fit-All—See Sager Co.
 Ford-Clark Co., 3126 Perkins Ave., Cleveland, O.
 Fulflex—See Fulton Co.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. "Fulflex." (See pages 569 to 574.)
 Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. "Wilfit." (See page 167.)
 Glasgow—See Standard Safety Fender Corp.
 Gray-Hofman Co., 542-548 North Parkside Ave., Chicago, Ill. (See page 265.)
 Guardian—See Milwaukee Auto Engine & Supply Co.
 Halladay Co., L. P., Decatur, Ill. "Universal," "Simplex." (See page 171.)
 Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 705.)
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Bellevue Bumpers.) (See page 179.)
 Howe—See Columbus Auto Brass Co.
 Hy-Lo—See Cox Brass Mfg. Co.
 Igo Vertical Bumper Co., 149 W. Ohio St., Chicago, Ill.
 Jumbo—See Standard Steel Products Co.
 Kimball & Co., C. P., 3900 S. Michigan Ave., Chicago, Ill.
 Ivon—See Metal Stamping Co.
 McAllister Co., W. B., 2165 E. 31st St., Cleveland, O.
 McGregor—See C. G. Spring Co.
 Metal Stamping Co., Long Island City, N. Y. "Lyon." (See page 108.)
 Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. "Conqueror," "Champion," "Wauke," "Sterling," "Truitt," "Guardian." (See page 857.)
 New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Better."
 New Jersey Tube Co., Newark, N. J. "Con-over."
 Nichols & Wright Motor Co., 42 Parkridge Ave., Buffalo, N. Y.
 Oro—See Au-To Compressor Co.
 Pennsylvania Pressed Steel Corp., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankee."
 Presto—See Badger Mfg. Corp.
 Protex—See Badger Mfg. Corp.
 Ramspring Bumper Co., 110 S. Dearborn St., Chicago, Ill. (See page 169.)
 Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y. "Diamond," "Simplex," "Fit-All."
 Shur-On—See Badger Mfg. Corp.
 Simplex—See Badger Mfg. Corp.
 Simplex—See Halladay Co.
 Simplex—See Sager Co.
 Southern Specialty Co., Old Colony Bldg., Chicago, Ill. "Evelyn."
 Stafford Spring Guard Co., 6636 S. Park Ave., Chicago, Ill.
 Standard—See Central Brass & Fixture Co.
 Standard Safety Fender Corp., 80 Boylston St., Boston, Mass. "Glasgow."
 Standard Steel Products Co., Birch & Albert Sts., Lansing, Mich. "Jumbo."
 Sterling—See Milwaukee Auto Engine & Supply Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. "Autoguard." (See page 589.)
 Toledo Cable Co., 1035 Grand Ave., Toledo, O. "Bull Dog."
 Traffic—See Biflex Products Co.
 Tri-Plex—See Wolverine Bumper & Specialty Co.
 Truitt—See Milwaukee Auto Engine & Supply Co.
 Tyler Mfg. Co., 64-66 Pearl St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.
 U. S. E. Corp., 7 W. 61st St., New York, N. Y.
 United States Spring Co., 1130-34 S. Los Angeles St., Los Angeles, Cal.
 Universal—See Halladay Co.
 Wauke—See Milwaukee Auto Engine & Supply Co.
 Wayne Bumper Co., Peoples Trust Bldg., Ft. Wayne, Ind.
 Wilfit—See Gemco Mfg. Co.
 Wolverine Bumper & Specialty Co., 514 Bond Ave., Grand Rapids, Mich. "Tri-Plex."
 Yankee—See Pennsylvania Pressed Steel Corp.

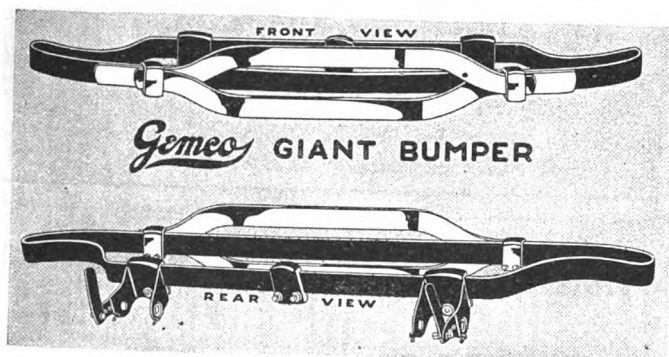
BUMPERS, for Fords

(For protecting Lamps and Radiators; also for rear of car)

- Allith-Prouty Co., Danville, Ill.
 (See page 763.)
 American Metal Parts Mfg. Co., Milwaukee, Wis.
 Asch & Co., Inc., 10-24 W. 61st St., New York, N. Y. (Eastern Distributors for Halliday Bumpers.) (See page 247.)
 Autoguard—See Stewart-Warner Speedometer Corp.
 Badger Mfg. Corp., Milwaukee, Wis.
 (See page 171.)
 Better—See New Era Spring & Specialty Co.
 Biggin Co., C. P., 1829-39 Harlan St., Philadelphia, Pa. "Taylor."
 Blitwell Accessories Co., 401 E. 23rd St., New York, N. Y.
 C. G. Spring Co., Kalamazoo, Mich.
 "McGregor." (See page 794.)
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Cox Brass Mfg. Co., Albany, N. Y. "E-Z," (See page 108.)
 Defender Mfg. Co., 1002 S. Michigan Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

GEMCO GIANT BUMPERS



The design feature of the Giant Bumper is the horizontally straight loop of spring steel, to the front of which are securely clamped protection bars in either black or nickel.

This construction, with the resulting three bars in front, and one in the rear for reserve, makes possible a Bumper giving as near 100% protection as it is possible to obtain.

The steel used is $2\frac{1}{4}$ inches in width, of high carbon content, and especially heat treated to obtain the greatest resiliency.

The brackets are made of heavy steel plate secured to the horn of the frame by the spring hanger bolt, and braced by a steel arm bolted to the side of the frame. Thus this Bumper becomes practically a part of the frame of the car.

Prices—With nickel protection bars.....\$28.00
 With black protection bars..... 26.00

Gemco Little Giant Bumpers

A lighter Giant Bumper for medium weight cars. Made of 2-inch bars of spring steel instead of the $2\frac{1}{4}$ -inch on the Giant Bumpers.

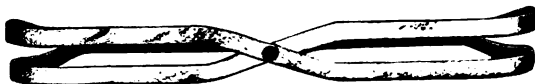
Prices—With nickel protection bars.....\$23.00
 With black protection bars..... 21.00

Write to us for recommendations to fit different cars

GEMCO Manufacturing Co., 666 South Pierce Street, Milwaukee, Wis.



Please mention The Automobile Trade Directory



COX HYLO BUMPERS

Beauty of Design and Finish—Excellence of Material and Construction—are outstanding features.

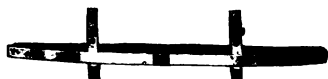
Also Cox Bumpers are made specially to fit each make and model of car. Six-inch impact surface—tempered and tested. Various styles and models, ranging from \$15 to \$25. Distributors everywhere.

WRITE FOR COMPLETE CATALOG

Sales and Service Stations: 161 West 64th (near Broadway), New York; 2551 Indiana Ave., Chicago

COX BRASS MFG. CO. Established 1872 **ALBANY, N. Y.** Factories at Albany and Cleveland

Bell Safety Bumper



Its regular strength is amplified by the inner section of spring steel which takes up and cushions the severest impact.

Two bumpers in one.

The Patented Bell Bracket Attachment affords 14" of vertical bumping surface, preventing damage to lamps, mudguards and radiators.

Insures safety in collision.

The Bell Safety Bumper adds materially to the car's appearance and positively protects the entire front of the car.

Gives the dealer a worth while commission and the car manufacturer a big selling part as equipment.

BELL SAFETY BUMPER CO.

BUSH TERMINAL BUILDING No. 6
BROOKLYN NEW YORK

The Initial Objective

BEFORE you can sell a man a car, truck, tractor or accessory, you have first to provide him with a place to go and buy it.

Thus the jobber and dealer become the initial objective of any correctly planned merchandising campaign.

Experience has proved that the support of the trade will be given only when it is approached through established and familiar agencies of communication. **MOTOR WORLD**, by virtue of its position as the only automotive business paper devoted primarily to the merchandising problems of the automotive trade, is the strongest single aid that the manufacturer can enlist.



DEALERS, JOBBERS, GARAGEMEN

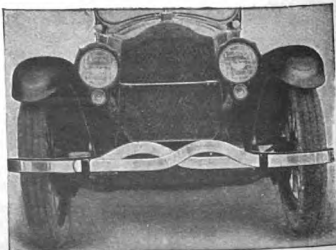
239 W. 39th St., New York
Mallers Building, Chicago

THE LYON CONVEX

Unusual in design, the Lyon Convex Bumper adds beauty, distinction, and individuality, and has the strong serviceable qualities possessed by all Lyon Bumpers. Fits all cars perfectly.

The Lyon "New Way" Attachment for Snubber Equipped Cars. Can be attached in 10 minutes without disturbing snubbers

Metal Stamping Co. Long Island City, N.Y.



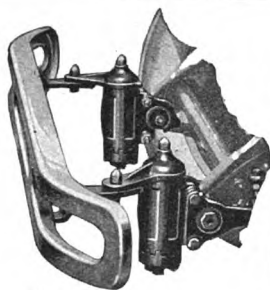
Please mention The Automobile Trade Directory

RAMSPRING BUMPER

PATENTED

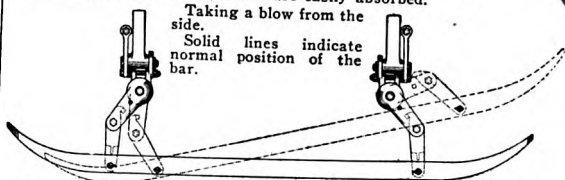
"THE COILS ABSORB THE SHOCK"

The resilient coil springs, mounted back of the rigid cross bar, act as cushions and take up the shock of the impact. The flexibility of the springs, allowing the bar to move in any direction, offers utmost protection. Whether from the side, or from head-on, blows are easily absorbed.



Taking a blow from the side.

Solid lines indicate normal position of the bar.



LIST PRICES

Style BN—Face of bar polished nickel, fittings black enameled...\$29.00

Style DN—Face of bar dull nickel, fittings black enameled 29.00

Style E—Bar and fittings black enameled 27.00

All prices f. o. b. Chicago

Installation is quick and easy. The bracket with its three-point support and simple construction fits any car with front frame horns. (Approved by Underwriters' Laboratories.)

Wire or write for complete details of our sales plan.

THE RAMSPRING BUMPER CO.

110 SO. DEARBORN ST.

CHICAGO, ILLINOIS

Bumpers

THE BELLEVUE MFG. CO.
BELLEVUE, OHIO.

Special tailor made, anti-rattle one piece
BUMPERS BOLT TO FRAME
without attachments

Dodge Brothers, Oakland, Buick and Studebaker cars.

Tow Cables on reel, Tire Locks.

THE BELLEVUE MFG. CO.

BELLEVUE, OHIO



TRADE MARK

The Biflex Spring Bumper halts all single bar bumpers from passing. Its twin bars spaced high and low will not let them pass over or under it to inflict damages or to interlock. Single bar bumpers are placed at various heights from the ground and their chances of meeting each other and stopping are very remote. The first bumper to block and ward off all others is the Biflex.

STANDARD BIFLEX BUMPERS

For Motor Cars weighing 3,000 lbs. and over:

MODELS	FRONT	REAR
Traffic—full black enamel.....	\$26.00	\$26.00
Crescent—upper bar nickel.....	27.00	27.00
Boulevard—full front nickel.....	28.00	28.00

(Prices west of Rocky Mountains, \$28.00, \$29.00, \$30.00 respectively.)

Prices subject to change without notice.

JUNIOR BIFLEX SPRING BUMPERS

For Motor Cars weighing 2,500 lbs. and under:

MODELS	FRONT	REAR
Traffic—full black enamel.....	\$21.00	\$21.00
Crescent—upper bar nickel.....	22.00	22.00
Boulevard—full front nickel.....	23.00	23.00

(Prices west of Rocky Mountains, \$23.00, \$24.00, \$25.00 respectively.)

Prices f. o. b. factory.

BIFLEX PRODUCTS COMPANY

WAUKEGAN, ILL.

Please mention The Automobile Trade Directory

BUMPERS, for Fords (Continued)

Dow Co., Louisville, Ky. (See page 187.)
 Duplex Machine Co., 93 Lafayette St., Newark, N. J.
 E-Z—See Cox Brass Mfg. Co.
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Fulflex—See Fulton Co.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. "Fulflex." (See pages 509 to 574.)
 Gemco Mfg. Co., 668 S. Pierce St., Milwaukee, Wis. "Wilfit." (See page 167.)
 Guardian—See Milwaukee Auto Engine & Supply Co.
 Halladay Co., L. P., Decatur, Ill. (See page 171.)
 Hastings Mfg. Co., 36 E. Mill St., Hastings, Mich. (See page 527.)
 Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.
 Improved Motor Accessories Co., 1100 St. Clair Ave., Cleveland, O. "Two-in-One."
 International Metal Mfg. Co., Wayne Ave. & Berkley St., Philadelphia, Pa.
 International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 467.)
 Jumbo—See Standard Steel Products Co.
 Lyon—See Metal Stamping Co.
 McAllister Co., W. B., 2165 E. 31st St., Cleveland, O.
 McGregor—See C. G. Spring Co.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Lyon." (See page 168.)
 Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. "Guardian." (See page 857.)
 New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Better."
 Pennsylvania Pressed Steel Corp., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankee."
 R & R Mfg. Co., 203 La Salle St., Chicago, Ill.
 Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y.
 Stafford Spring Guard Co., 6636 S. Park Ave., Chicago, Ill.
 Standard Steel Products Co., Birch & Albert Sts., Lansing, Mich. "Jumbo."
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 759.)
 Sterling Spring Co., 2148-62 Scranton Rd., Cleveland, O.
 Stewart-Warner Speedometer Corp., Chicago, Ill. "Autoguard." (see page 589.)
 Taylor—See Biggin Co.
 Two-in-One—See Improved Motor Accessories Co.
 Wilfit—See Gemco Mfg. Co.
 Yankee—See Pennsylvania Pressed Steel Corp.

BUMPERS, DOOR—See Anti-Rattlers, Door

BUMPERS, REAR—See Bumpers, Automobile

BUMPERS, RUBBER SPRING—See Bumpers, Spring

BUMPERS, Spring
(Rubber or Spiral Spring Bumpers to prevent car frame from striking axle)
 Accessory Supply Co., Reliance Bldg., Kansas City, Mo. "Hickory."
 American Chain Co., Bridgeport, Conn. "Twinbar." (See page 329.)
 American Rubber & Tire Co., 100 Beech St., Akron, O.
 Booth—See Lansing Auto Bumper Co.
 Boston Belting Co., 84 Linden Park St., Boston, Mass.
 Bridge Web Tire Co., 2962 Prairie Ave., Chicago, Ill.

Cincinnati Rubber Mfg. Co., Cincinnati, O. (See page 475.)
 Combination Rubber Mfg. Co., Bloomfield, N. J.
 Continental Rubber Works, 1903 Liberty St., Erie, Pa.
 Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
 Falkenhainer & Co., 313 Carr St., St. Louis, Mo. "RI-D-Z."
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O.
 Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
 Hickory—See Accessory Supply Co.
 Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 835.)
 Lansing Auto Bumper Co., Lansing, Mich. "Booth."
 Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill.
 Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Republic Rubber Co., Albert St., Youngstown, O.
 RI-D-Z—See Falkenhainer & Co.
 Sterling Spring Co., 2148-62 Scranton Rd., Cleveland, O.
 Thermoid Rubber Co., Trenton, N. J. (See page 531.)
 Twinbar—See American Chain Co.
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.
 United States Tire Co., 1790 Broadway, New York, N. Y. (See page 863.)
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

BURLAP, Importers of

American Bag Co., Memphis, Tenn.
 Bemis Bro. Bag Co., 601-25 S. Fourth St., St. Louis, Mo.
 Bemis-Indianapolis Bag Co., Indianapolis, Ind.
 Central Bag Mfg. Co., 3623-30 Iron St., Chicago, Ill.
 Cleveland-Akron Bag Co., Cleveland, O. (See page 91.)
 Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.
 Ludlow Mfg. Associates, 111 Devonshire St., Boston, Mass. (See page 941.)
 Milwaukee Bag Co., 306-20 S. Water St., Milwaukee, Wis.
 Riegel Sack Co., Woolworth Bldg., New York, N. Y.

BURNER CLEANERS—See Cleaners, Acetylene Burner

BURNERS, Acetylene Lamp

Alco—See American Lava Corp.
 American Lava Corp., 27 Williams St., Chattanooga, Tenn. "Alco."
 Brilliant—See Monosmith Bros. Co.
 Carroll, J. B., 3057 Carroll Ave., Chicago, Ill. "Hahn."
 Colonial Mfg. Co., 711-13 E. Main St., Chattanooga, Tenn.
 Crescent—See Kirchberger & Co.
 Hahn—See Carroll, J. B.
 Imperial—See Kirchberger & Co.
 Kirchberger & Co., M. 14th Ave. & 37th St., New York, N. Y. "Crescent," "Perfection," "Koro," "Victory," "Stalt," "Standard American," "Imperial," "New Yankee."
 Koro—See Kirchberger & Co.
 Monosmith Bros. Co., 500 S. Main St., Spencer, O. "Brilliant."

Everything is listed under the NOUN or principal word

BADGER BUMPERS

IN THE Diamond, Channel, Spring Bar and De Luxe Spring Bar Types—favored by the motoring public because of their staunch, protective strength, firm, non-vibrating attachment fittings and handsome appearance. Highly salable and profitable.

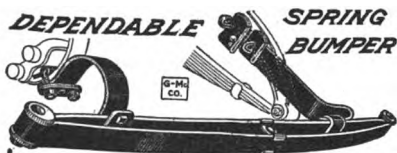
Badger Line also comprises oversized Steering Wheels, All-Steel Creepers, Tire Racks, Cut-outs, Tire and Lug-gage Carriers, Foot and Robe Rails, Tow Lines and other Badger Neces-sories.

Write for Complete Catalog

BADGER MFG. CORP.

Milwaukee

Wisconsin



Bumpers For All Cars

also Radius Rod supports, Body and Fender Braces, Rear Axle Truss Rods, Radiator supports, Robe Rails, Petcock Wrenches, Fan Belt Guides, Radiator Drainers, Windshield Ventilating At-tachments, Chassis Brackets, Top Hold-ers, etc., etc.

ALL STEEL PRODUCTS SERVICEABLE—PROFITABLE

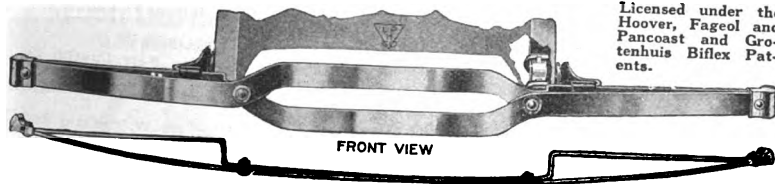
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Write for particulars
.....

On permanent exhibit at
1533 South Michigan Boulevard, Chicago, Ill

GAHM-McCORMICK CO.

Streator — 806 E. Main St. — Illinois

HALLADAY DOUBLE-FACE SPRING STEEL BUMPER



FRONT VIEW

TOP VIEW

Licensed under the
Hoover, Fageol and
Pancoast and Gro-
tenhuis Biflex Pat-
ents.



All Steel Fitting

Has massive appearance and exceptional strength without unnecessary weight. The flexibility and strength of the double truss spring construction affords greatest possible protection to car. Bar is handsomely finished in Black Japan with Nickel end caps and name plate bolts, or in Full Nickel, plated over a buffed copper plate base. Weight of bar, 26 lbs. Supplied complete with all-steel fittings as here shown, or with any of our regular or special fittings, front or rear.

Prices, with any style fittings:

Double-face Spring Steel Bar, 2 in. x $\frac{1}{4}$ in. Japan finish...\$17.00

Double-face Spring Steel Bar, 2 in. x $\frac{1}{4}$ in. Nickel Pl. finish 19.00

Order from your jobber, or write us, Dept. 101

Manufactured by

L. P. HALLADAY COMPANY, DECATUR, ILL., U. S. A.

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BURNERS, Acetylene Lamp (Continued)

New Yankee—See Kirchberger & Co.
 Novelty Burner Co., Chattanooga, Tenn.
 "Queen Eta."
 Perfection—See Kirchberger & Co.
 Queen Eta—See Novelty Burner Co.
 Stallt—See Kirchberger & Co.
 Standard American—See Kirchberger & Co.
 Tennessee Burner Mfg. Co. (East Lake), Chattanooga, Tenn. "XL."
 XL—See Tennessee Burner Mfg. Co.
 Victory—See Kirchberger & Co.

BURNERS, Gasoline and Kerosene

(For Steam Boilers)

Simmons, H. C., North Burlington, Vt.

BURNERS, LAMP—See Burners, Acetylene Lamp

BURNERS, Lead

Anthony Co., 138 West Ave., Long Island City, N. Y.
 Bastian-Blessing Co., W. Austin Ave. & La Salle St., Chicago, Ill. "Rego."
 Bermo—See Bertschy Engineering Co.
 Bertschy Engineering Co., 802 N. 16th St., Omaha, Neb. "Bermo."
 Fidelity Brass Mfg. Co., 1001 W. Washington St., Chicago, Ill.
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Henderson-Willis Welding & Cutting Co., 2305 N. 11th St., St. Louis, Mo.
 Hoke-Shontz—See Shontz Co.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Oxweld Acetylene Co., 3642 Jasper Pl., Chicago, Ill.
 Rego—See Bastian-Blessing Co.
 Shontz Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. "Hoke-Shontz." (See page 151.)
 Superior Oxy-Acetylene Machine Co., 1102 E. High St., Hamilton, O.
 Torchweld Equipment Co., 224 N. Carpenter St., Chicago, Ill.
 Turner Brass Works, Sycamore, Ill.
 United States Welding Co., 120 N. First St., Minneapolis, Minn.
 Waterhouse Welding Co., 15 Pelham St., Boston, Mass.

BURNING-IN MACHINES—See Machines, Burning-In

BURNING MACHINES, LEAD—See Burners, Lead

BUSHING EXTRACTORS FOR FORDS—See Extractors, Bushing

BUSHING PULLERS FOR FORDS—See Extractors, Bushing

BUSHING REMOVERS FOR FORDS—See Extractors, Bushing

BUSHING SWEDGING PRESSES—See Presses, Bushing Swedging

BUSHINGS, BABBITT-LINED BRONZE-BACKED—See Bearings and Bushings

BUSHINGS, Bronze and Die Cast

(For Cored Bushing Bars—See Metals, Bearing; For Die Cast Bearings—See Castings, Die; For Bushing Metals—See Metals, Bearing; For Bronze-backed Babbitt-lined Bearings and Bushings—See Bearings and Bushings, Babbitt-lined Bronze-backed. Also for Bushings for Fords—See Bushings, Bronze, for Fords)

Alloy Foundry & Machine Corp., New Rochelle, N. Y.
 Aluminum Manufacturers, Inc., 5205 Carnegie Ave., Cleveland, O. "Lynux."
 American Bronze Corp., Berwyn, Pa. (See page opposite Inside Front Cover.)
 Armand Machine Works, 442-50 N. Wells St., Chicago, Ill.
 Avis Gun Barrel Co., New Haven, Conn. (See page 629.)
 Buckeye Brass & Mfg. Co., 6410 Hawthorne Ave., Cleveland, O.
 Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 175.)
 Capitol Brass Works, 2306 Franklin St., Detroit, Mich.
 City Brass Foundry Co., 5318 St. Clair Ave., N. E., Cleveland, O.
 Cleveland Graphite-Bronze Co., 30th St. & Chestnut Ave., Cleveland, O.
 Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.
 Coful Auto Parts Co., National City Bank Bldg., Cleveland, O. (Manufacturers' Agents.) (See page 509.)
 Cramp & Sons Ship & Engine Building Co., Wm., Philadelphia, Pa. (See page 189.)
 Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
 Detroit Motor Castings Co., 299-303 Beaufait Ave., Detroit, Mich.
 Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 207.)
 Federal Bearing & Bushing Corp., Detroit, Mich. (See page 173.)
 Frontier Brass Foundry, 818 Elmwood Ave., Niagara Falls, N. Y.
 G. & R. Foundry & Machine Co., 6½ St. & Penn. R. R., Terre Haute, Ind.
 Gallagher's Sons, James, 87 Centre St., New York, N. Y.
 Garfield Mfg. Co., Garfield, N. J.
 Johnson Bronze Co., New Castle, Pa. (See page 174.)
 Joppa Machine Co., 1527 N. Fawn St., Philadelphia, Pa.
 Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
 Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.
 Lynux—See Aluminum Manufacturers, Inc.
 Marquette Metal Products Co., 6545 Carnegie Ave., Cleveland, O.
 Mill Co., D. B., Westside Ave., Jersey City, N. J.
 Mills Brass Co., Wm. A., Port Chester, N. Y.
 Milwaukee Die Casting Co., 207 Fourth St., Milwaukee, Wis. (See page 173.)
 Moccasin Bushing Co., Boyce & 20th Sts., Chattanooga, Tenn.
 Mussy-Lyon Co., Detroit, Mich. (See page 101.)
 National Bushing & Parts Co., 1111-13 S. Fifth St., Minneapolis, Minn.
 Niagara Brass Mfg. Co., Lockport, N. Y.
 Prime Mfg. Co., Milwaukee, Wis. (See page 187.)
 Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.
 Regar Brass Mfg. Co., Cleveland, O. (See page 174.)
 Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.

Everything is listed under the NOUN or principal word

Federal Bronze Cored Bars for Bushings

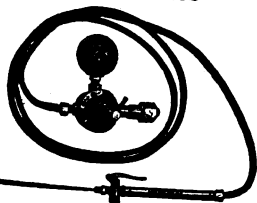
THE BEST BRONZE for repairs on automobiles, trucks, tractors and machine tools, because IT LASTS THE LONGEST.

Manufactured by the producers of over 5,000,000 BABBITT-LINED, BRONZE-BACK BEARINGS and BRONZE BUSHINGS a year.

Write for Particulars

FEDERAL BRASS & MACHINE CORPORATION
DETROIT, MICHIGAN

IMPERIAL Carbon Burning Outfits OXYGEN PROCESS



No. 6—Carbon Burning Outfit—Price \$15.00

A Big Money Maker

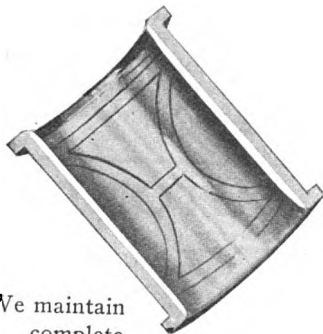
Every garage should have one of these outfits. Your jobber can supply you promptly

IMPERIAL PRODUCTS include Welding, Cutting and Lead Burning Equipment, Auto Accessories, etc.

The Imperial Brass Mfg. Co.

1234 W. Harrison St., Chicago

BRONZE BACK BABBITT LINED BEARINGS



We maintain
complete

BRASS FOUNDRY, MACHINE SHOP and BABBITTING DEPTS., devoted exclusively to the manufacture of all classes of AUTOMOBILE, TRUCK, TRACTOR and STATIONARY ENGINE BEARINGS.

Absolute cohesion of metals and conformity to your specifications guaranteed.

DIE MOULDED CASTINGS

Manufacturers are constantly finding new uses for our DIE CASTINGS.

Send us samples or blue prints of your parts and we will gladly quote you prices



**MILWAUKEE
DIE CASTING
COMPANY**

297 Fourth St., Milwaukee, Wis.

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E. A. Whitehouse Manufacturing Co.

EDWARD A. WHITEHOUSE, President

*Whitehouse High Speed Bearing Bronze Bars
Automobile Hardware*

AUTOSCOPE MIRRORS, SPRING SHACKLE BOLTS, WRIST PINS
and BUSHINGS OF SUPERIOR QUALITY FOR ALL MODEL CARS

42-54 Elm Street

Newark, New Jersey

AUTOMOTIVE BUSHINGS

ANY SIZE—ANY STYLE

MACHINED OR ROUGH



BRASS AND BRONZE BUSHINGS[®] for Automobile Parts

Accurately machined to meet your exact requirements. Send us your blueprints and specifications. You'll be surprised at our reasonable charges for the superior service and quality materials that combine to make our Brass and Bronze Bushings the best obtainable.

The REGAR BRASS MFG. COMPANY

Brass and Bronze Founders and Finishers
Cleveland, Ohio

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Bushings and Bearings

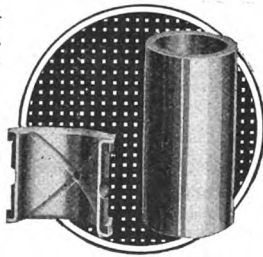


Bunting quality in bushings and bearings is well and widely known. Bunting service to the trade is constantly modernized as changing conditions may indicate. One acceptable innovation is our "In Stock" line of 143 different sizes of completely finished bronze bushings. These are always ready for instant delivery. They fit every usual need. Small lots at big production prices. Write for stock card C.

Bushings and bearings made to customer's dimensions. Babbitt lined bearings of exclusive superiority. Cored Bronze bars in stock in 16 sizes. Quick service at factory and all branches.

The Bunting Brass & Bronze Company
737 Spencer Street Toledo, Ohio

New York City Chicago Cleveland
Gr'd Central Palace 722 S. Michigan Ave. 1362 E. 6th Street
Vanderbilt 7300 Wabash 9153 Bell—Main 5991
San Francisco, 198 Second Street (corner Howard). Douglas 6245



The FACTORY



Where better bushings are made

Our plant has grown from a small shop to the plant you see in the illustration.

As our plant has expanded in size . . . so have our men increased in skill.

Just as "making better bushings" is the aim of our factory . . . so "making better bushings" is the life work of our men. They have grown up with the plant. Our aims, our ideals . . . have become their aims and ideals.

It is only reasonable to believe that men who make one thing their life work can do that thing better than anyone else, provided they have the proper tools and machinery to work with.

Our factory is equipped with the most up-to-date machinery. Every piece of machinery that is needed to turn out a "better bushing" is found here.

By using this machinery and employing men who have made "making better bushings" their life work, we feel that we can honestly call our factory "The Factory Where Better Bushings Are Made."

THIERY & KENDRICK MFG. CO.
2724 Franklin Street :: :: DETROIT, MICH.

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BUSHINGS, Bronze and Die Cast (Continued)

Sani Products Co., 209 W. Randolph St., Chicago, Ill.
 Sherwood Brass Works, 6331 E. Jefferson Ave., Detroit, Mich.
 Smith Hardware Co., Frank F., 85 Clay St., Newark, N. J.
 Standard Brass Foundry Co., 990 E. 17th St., Cleveland, O.
 Sterling Specialty Co., New Comerstown, O.
 Superior Brass Works, 250 Brush St., Detroit, Mich.
 Thiery & Kendrick Mfg. Co., 2724 Franklin St., Detroit, Mich. (See page 175.)
 Twentieth Century Brass Works, 516 Fifth Ave., S., Minneapolis, Minn.
 United Brass & Aluminum Mfg. Co., Goulden St., Fort Huron, Mich.
 Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.
 Wagner Mfg. Co., E. R., North Milwaukee, Wis.
 Warner Electric Co., 2507 S. Walnut St., Muncie, Ind.
 Wolverine Tube Co., 1411-51 Central Ave., Detroit, Mich. (See page 923.)

BUSHINGS, Bronze and Die Cast, for Fords

Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
 Ban-Rov & Co., 2230 S. Wood St., Chicago, Ill.
 Bemiller Foundry & Machine Co.—See Eckhouse & Co.
 Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
 Dunham Co., Thos., Aurora, Ill. (See page 145.)
 Eckhouse & Co., Walter, 616-23 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Belleville, O.) (See page opposite Title Page.)
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 Gifford Engine Co., Lansing, Mich.
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Johnson Bronze Co., New Castle, Pa. (See page 174.)
 Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
 Martin & Anson, 2226-28 Indiana Ave., Chicago, Ill.
 Mills Brass Co., Wm. A., Port Chester, N. Y.
 National Bushing & Parts Co., 1111-13 S. Fifth St., Minneapolis, Minn.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Niagara Brass Mfg. Co., Lockport, N. Y.
 Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.
 Standard Brass Foundry Co., 990 E. 67th St., Cleveland, O.
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.
 Vulcan Die Casting Corp., 1126-36 W. Belden Ave., Syracuse, N. Y.
 Warner Electric Co., 2507 S. Walnut St., Muncie, Ind.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)
 Zagora Mfg. Co., J., 1309 S. Mint St., Charlotte, N. C.

BUSHINGS, CORK—See Washers, Cork

BUSHINGS, DIE CAST—See Bushings, Bronze

BUSHINGS, Drilling and Reaming

Bard Mfg. Co., Royersford, Pa. (See page 149.)
 Jig Bushing Co., Pontiac, Mich.

BUSHINGS, GRAPHITE—See Bearings, Oilless

BUSHINGS, OILLESS—See Bearings, Oilless

BUSHINGS, Spark Plug Testing

(Steel bushing or shell threaded at one end to fit spark plug opening, at the other to receive the plug and containing a glass cylinder through which the operation of the plug may be observed)

Detroit Accessories Corp., Detroit, Mich. (See page 669.)

BUSHINGS, Starter or Primer Attaching

(For use on motors not equipped with pet cocks)

A. & G. Mfg. Co., West Newton, Mass.
 Stryker, C. W., 240 Shonnard St., Syracuse, N. Y.

BUTTON MACHINES—See Machines, Upholstery Button

BUTTONS, HORN—See Buttons, Push

BUTTONS, Push

(Special Push Buttons for use with Electric Horns, See also Horns, Electric)

American Electric Co., 6401 S. State St., Chicago, Ill.
 Beaver Machine & Tool Co., 625-43 N. Third St., Newark, N. J.
 Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill. "Push-Well," "Tip Top."
 (See pages 177 and 809.)
 Caskey-Dupree Mfg. Co., Marietta, O. "Handy."
 General Phone Mfg. Co., Elyria, O. (See page 177.)
 Handy—See Caskey-Dupree Mfg. Co.
 Handy Products Co., Erie Bldg., Cleveland, O.
 J-F—See Jones-Fisher Co.
 Jones-Fisher Co., 20 E. Broad St., Columbus, O. "J-F."
 Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.
 Pushwell—See Benjamin Electric Mfg. Co.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
 (See page 459.)
 Tip Top—See Benjamin Electric Mfg. Co.

Everything is listed under the NOUN or principal word



UNIVERSAL PUSH BUTTON

2,000,000 in use

In appearance this button has the automobile look of simplicity, strength and reliability.

The button itself is large and get-at-able, but there is no unnecessary bulk, in fact, it is about all-button. Retails for \$0c.

Write us today for price in quantity.

The General Phono Mfg. Co.

Formerly Named

The Garford Mfg. Co.

Elyria, Ohio

Every Manufacturer Has Need for this Trade Influence

EQUALLY as important as the merchandise which the dealer and garageman sell, is the service they sell with it.

That is why they find MOTOR AGE so necessary to the successful prosecution of their business. MOTOR AGE, through its country-wide organization, taps every source of discovery and ideas that deal with service methods and equipment, giving them a clear vision of the whole trade and its vast activities.

MOTOR AGE has long been one of the most potent factors in the development of profitable trade connections for automotive manufacturers.

MOTOR AGE

Mallers Building, Chicago
239 W. 39th St., New York



8106 O

Steering-Wheel Mounting

BENJAMIN

Buttons are made in a variety of styles and mountings to care for all requirements. Flush-type style may be used also for door-bells and call systems, as well as for automobiles.

The several types shown for spark-advance levers are used by the prominent steering-column manufacturers as standard equipment.



also include an extensive line of automobile and motorcycle horns, as well as garage lighting equipment and industrial signals.

Write for our descriptive booklet.

BENJAMIN ELECTRIC MFG. CO.

CHICAGO

NEW YORK

SAN FRANCISCO



8106 B

Fore-Door Mounting



.995

8124 A

Steering-Column Mounting



.630

8216 A

Split-Type Lever Mounting



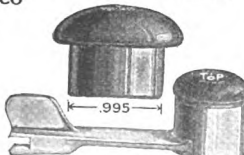
K-552

For Light Steering Columns



8169 F

Surface Mounting



.995

For Heavy Steering Columns

Please mention The Automobile Trade Directory

BUTTONS, Special Horn, for Fords

(Designed to put horn control in a more accessible position by attaching to steering wheel column, etc.)

Aerofram Co., 107 Massachusetts Ave., Boston, Mass. "Nu-Way."
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Buld-Nut Mfg. Co., Sunny Slope Station, Kansas City, Mo.
 Handy Products Co., Erie Bldg., Cleveland, O.
 Nu-Way—See Aerofram Co.

BUTTONS, Upholstery

Atlas Tack Corp., Fairhaven, Mass.
 Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."
 Auveco—See Auto-Vehicle Parts Co.
 Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)
 Milonite—See Morley Button Mfg. Co.
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 929.)
 Morley Button Mfg. Co., 130 Boylston St., Boston, Mass. "Milonite."
 Neider Co., F. A., Augusta, Ky.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Tockwotton Co., 79 S. Main St., Providence, R. I.
 United Button Co., 50 Union Sq., New York, N. Y.
 White Co., L. C., 314 Bank St., Waterbury, Conn.

CABINET LOCKS—See Locks, Cabinet and Pad

CABINETS, Accessory

(See also Cases, Bolt and Screw)
 Heller & Co., W. C., Wabash Ave., Montpelier, O.
 Miller Brothers, Lewisburg, Pa. (See page 179.)
 Stevens & Co., 375 Broadway, New York, N. Y. (Distributors.) (See page 197.)

CABINETS, BOLT AND SCREW—See Cases, Bolt and Screw

CABINETS, FIRST AID—See Cases, Medical Emergency

CABINETS, GREASE—See Guns, Portable Garage Grease

CABLE, Flexible Control

Bowden—See Gwilliam Co.
 Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. "Bowden." (Dealer.) (See page 102.)

CABLE, IGNITION—See Wire, Insulated

CABLE, WIRE—See Rope, Bronze Wire; also Rope or Cable, Steel Wire

CABS, Metal Truck

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky.
 Anthony Co., Streator, Ill. (See page 127.)
 Auburn Wagon Co., 528 W. Race St., Martinsburg, W. Va.

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.
 Continental Trailer Corp., 3625 Superior St., Detroit, Mich.

Field Body Corp., Owosso, Mich.
 Hannibal Truckbody Co., 1001 Collier St., Hannibal, Mo.

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Highland Body Mfg. Co., 716 Elmwood Pl., Cincinnati, O.

Hummel Mfg. Co., 3014 LaSalle St., St. Louis, Mo. (See page 143.)

Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.

Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.

Pehl Body Co., Tenth & Euclid Sts., Kansas City, Mo.

Sheet Steel Products Co., Michigan City, Ind. (See page 179.)

Spaulding Mfg. Co., 933 Spring St., Grinnell, Iowa.

Stewart Iron Works Co., 17th St. & Madison Ave., Covington, Ky.

Tompson, N. W., 10 Scotia St., Boston, Mass. (New England Distributors for Field Cabs.) (See page 161.)

Wemaco—See Western Metal Specialty Co.

Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemaco."

Wilson Body Co., C. R., 1660 Clay Ave., Detroit, Mich.

CABS, Wood Truck

A. B. C.—See Clippinger & Sons Mfg. Co.

Abingdon Wagon Co., Abingdon, Ill.

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky.

Babcock Co., H. H., Watertown, N. Y.

Badger Auto Body Co., 309-13 Hanover St., Milwaukee, Wis.

Badger Mfg. Co., Eligh & M Sts. (Havelock), Lincoln, Neb.

Calumet Truck Body Corp., Calumet, Mich.

Clark Mfg. Co., J. L., Oshkosh, Wis.

Clippinger & Sons Mfg. Co., A. B., 1100 S. Mill St., Kansas City, Kans. "A. B. C."

Commercial Auto Body Co., 5401 N. Bulwer Ave., St. Louis, Mo. (See page 145.)

Davenport Body Co., 1507 Rockingham Rd., Davenport, Ia.

Defiance Carriage Co., Perry & Gorman Sts., Defiance, O.

Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.

Express Body Corp., Crystal Lake, Ill.

Fitz John-Erwin Mfg. Co., Muskegon, Mich.

General Woodwork Co., 1225-35 Budd St., Cincinnati, O.

Graves Co., L. C., Springboro, Pa.

H. & M. Body Corp., 608 Center St., Racine, Wis.

Hummel Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for General Woodwork Cabs.) (See page 143.)

Kennedy Cab & Body Co., Lewis Bldg., Minneapolis, Minn.

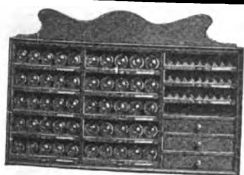
Koenig & Luhrs Wagon Co., 320 S. Sixth St., Quincy, Ill.

Lansing Body Co., 504 No. Grand Ave., Lansing, Mich.

Metropolitan Body Co., 430-34 Grand St., Bridgeport, Conn.

Miscampbell Body Co., H., 306 S. First Ave., E., Duluth, Minn. "Richeson's 3-in-1."

Everything is listed under the NOUN or principal word



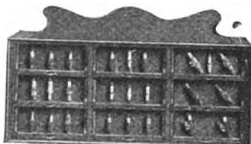
The Miller Electric Bulb, Fuse and Brush Cabinet. Price \$15.00, F.O.B.

THE SILENT SALESMEN

Dealers' twin necessities. They keep a complete stock of Spark Plugs, Bulbs, etc., instantly available and always conspicuously before customers passing in and out of the store.

Made of the best materials, exceptionally strong and durable. Cabinets are 35 inches wide, 22 inches high, and 9 1/2 inches deep. Shipping weight 65 lbs.

Write us today for full particulars.



The Miller Bros. Spark Plug Cabinet. Price \$15.00 F. O. B.

MILLER BROTHERS, Lewisburg, Pa.
Manufacturers of Garage Supplies

George L. Holmes

1776 Broadway New York, N. Y.

Eastern States Representatives for:

ANTHONY CO.

Anthony Tire Pumps

BARCALO MFG. CO.

Barcalo Wrenches and Pliers

Barcalo Automobile Creepers

BELLEVUE MFG. CO.

Buckeye Towing Cables and Tire

Locks Bellevue Bumpers

GRAHAM ROLLER BEARING CORPORATION

Graham Ball Thrust Bearings

Graham Socket Wrench Sets

GENERAL RUBBER GOODS CO.

Goliath Running Board Mats

Goliath Ford Floor Mats

K. D. MFG. CO.

K. D. Valve Lifters

LA VIETES MFG. CO.

Jiffy Windshield Cleaners

LOXTITE CARRIER CO.

Loxite Luggage Carriers

Sheet Steel Products Cabs



Built of steel and made to stand up under the most severe conditions.

A complete line of closed, semi and open cabs built in standard or special designs, shipped assembled or in sections. Also general sheet metal parts.

LET OUR ENGINEERS HELP YOU

Sheet Steel Products Co.

Michigan City, Indiana

Gordon Cam Shafts

"Some Build More, None Build Better"

We stand ready at all times to give you the benefit of our experience and take pride in saying that our work has never been criticized by our customers.

LO GORDON MANUFACTURING CO.

MUSKEGON, MICH.

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CABS, Wood Truck (Continued)

Model Body Corp., 3261 Bellevue Ave., Detroit, Mich.
 Novelty Carriage Works, 813 Second Ave., Spokane, Wash.
 Pehl Body Co., 10th and Euclid Sts., Kansas City, Mo.
 Randall—See Sunflower Body Works.
 Richeson's 3-in-1—See Miscampbell Body Co.
 Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.
 Southern Motor Mfg. Association, Beatty Bldg., Houston, Tex.
 Standard Body Co., 934 Lowe St., Appleton, Wis.
 Standard Body Co., Angola, Ind.
 Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Ia.
 Stunkard Bros., 24-26 N. Meridian St., Brazil, Ind.
 Sunflower Body Works, Topeka, Kans. "Randall."
 Walker & Werner, 207-13 Fayette St., Peoria, Ill.
 Weatherproof Body Corp., Corrunna, Mich. (See page 185.)

CAGE REMOVING TOOLS—See Tools, Valve Cage Removing

CALCIUM CARBIDE—See Carbide, Calcium.

CALIPERS and DIVIDERS

(For Micrometer Calipers—See Micrometers)

A. M. C.—See Athol Machine Co.
 Athol Machine Co., Athol, Mass. "Premier," "A. M. C."
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Consolidated Tool Works, 296 Broadway, New York, N. Y. "Pilot."
 Copelands—See Eagan, Thos. F.
 Eagan, Thos. F., 8 Blithwood Ave., Worcester, Mass. "Copelands."
 Fay—See Starrett Co.
 Goodell-Pratt Co., Greenfield, Mass.
 Meigs-Powell Co., 522 16th Ave., Milwaukee, Wis.
 Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
 Pexto—See Peck, Stow & Wilcox Co.
 Pilot—See Consolidated Tool Works.
 Premier—See Athol Machine Co.
 Starrett Co., L. S., Athol, Mass. "Fay," "Yankee."
 Union Tool Co., 48 E. River St., Orange, Mass.
 Yankee—See Starrett Co.

CAM CUTTING MACHINES — See Machines, Cam Cutting

CAMSHAFT ALIGNING JIGS FOR FORDS
 —See Reamers and Jigs, Camshaft Aligning

CAMSHAFT ALIGNING REAMERS FOR FORDS—See Reamers and Jigs, Camshaft Aligning

CAM-SHAFT BEARING PARTING TOOLS FOR FORDS—See Tools, Cam-Shaft Bearing Parting

CAM-SHAFTS, Finished or Machined

(For Cam-Shafts in the rough—See Forgings, Drop)

Accuratime—See Muskegon Motor Specialties Co.
 Cleveland Camshaft Co., 6530 Carnegie Ave., Cleveland, O.
 Commercial Machine Co., 31-33 W. Front St., Dunkirk, N. Y.
 Gordon Mfg. Co., L. O., Muskegon, Mich. (See page 179.)
 Jackson Motor Shaft Co., Jackson, Mich. (See page 307.)
 Muskegon Motor Specialties Co., Muskegon, Mich. "Accuratime." (See page 181.)
 Union Switch & Signal Co., Swissvale, Pa.
 Wyman-Gordon, Worcester, Mass. (See Back Bone.)

CAM-SHAFTS, Special, for Fords

Green Engineering Co., Main St. & Burns Ave., Dayton, O.
 Noonan Mfg. Co., D. R., 219-21 W. Court St., Paris, Ill.

CAMP OUTFITS—See Hampers; also Stoves, Camp; also Tents

CAMP STOVES—See Stoves, Camp

CAN HOLDERS—See Holders, Oil Barrel and Can

CAN TIPPERS—See Holders, Oil Barrel and Can

CANE SEATS—See Seats, Auxiliary

CANOPIES, Tractor

Hughes & Curren Co., 45 Halstead St. (Brighton Sta.), Rochester, N. Y. "Motoline."
 Moore Mfg. Co., Concrete & Water Sts., Waterloo, Iowa.
 Motoline—See Hughes & Curren Co.
 Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
 Otwell Tractor Equipment Co., 1538 Livernois Ave., Detroit, Mich.
 Wels Mfg. Co., Henry, Atchison, Kans. "Wels-teel."
 Welsteel—See Wels Mfg. Co.

CANS, Gasoline

(For Garage Use)

American Can Co., 120 Broadway, New York, N. Y. "Canco."
 Atlantic Stamping Co., 180 Ames St., Rochester, N. Y.
 Boyle Mfg. Co., 21 Sutter St., Los Angeles, Cal. (See page 183.)
 Canco—See American Can Co.
 Central Stamping Co., 172-74 Fulton St., New York, N. Y.
 Delphos Mfg. Co., 100-24 S. Pierce St., Delphos, O.
 Diener Mfg. Co., Geo. W., 400-20 Monticello Ave., Chicago, Ill. "Protection."
 Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 185.)

Everything is listed under the NOUN or principal word



Accuratetime Contribution

Silently contributing to responsive, positive power, Accuratetime Cam Shafts have naturally become a part of the world's finest built motors.

These integral shafts are built in any type, from one-cylinder shaft with single inlet and exhaust cam, to the twelve-cylinder "V" type with twenty-four cams. Lengths range from 4 to 72 inches and the following table classifies motor types and cylinders:

1 CYL.	2 CYL.	4 CYL.	6 CYL.	8 CYL.	12 CYL.
Farm Lighting Equipment	Tractor	Passenger	Passenger	Passenger	"V" Type
—	—	Truck	—	Both	for
Stationary	Marine	—	Marine	"V" Type and Straight	Passenger
—	—	Tractor	—	Marine	—
Heavy-Duty Marine	—	Marine	Aircraft	Aircraft	Aircraft
—	—	—	—	—	Marine

Cam contours are made in practically any design, suited to any nature of tappet, either roller, flatfoot, mushroom or shoe.

For oiling and weight-reduction purposes, a hole, running the entire length of shaft, is often required, varying from $\frac{1}{2}$ inch to 1 inch in diameter.

Also; in addition to ordinary, perfectly plain, cam-shaft lathe and grinding operations, any one, or a combination of the following, may be incorporated:

Eccentrics
Reamed Holes
Tapped Holes

Keyways
Threads

Oil Grooves

Splines
Helical Gears

Cross Holes
Flanges
Thrust Collars

Muskegon Motor Specialties Company

Detroit Office
617 Book Building
Telephone, Cherry 5867

Muskegon, Michigan

Chicago Office
14 E. Jackson Blvd.
Telephone, Harrison 5957

By Reputation — "The Best Cam Shafts Made"

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CANS, Gasoline (Continued)

Justrite Mfg. Co., 2061-81 Southport Ave., Chicago, Ill.
 Compact—See Vogel & Bros.
 McNutt Can Sales Co., 83 Chambers St., New York, N. Y.
 National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y.
 Non-Explosive Can & Tube Co., 127-29 S. Green St., Chicago, Ill.
 Protection—See Diener Mfg. Co.
 Sexton Can Co., 123 Broad St., Boston, Mass.
 Vogel & Bros., William, 37 S. Ninth St., Brooklyn, N. Y. "Kompact."

CANS, Oiling

(For Oil Guns—See Guns, Oil)

All-Way—See Famasco Distributing Co.
 Ansonia Novelty Co., Ansonia, Conn. "Richard."
 Automotive Exchange of America, Hippodrome Annex, Cleveland, O. "Ducky."
 Beacon—See Mooers-Wright Co.
 Brown Stamping Co., Toledo, O.
 Buko Oiler Mfg. Co., Clarkson, Nebr. "Sure Shot."
 Cannon Oiler Co., Keithsburg, Ill.
 Delphos Mfg. Co., 100-24 S. Pierce St., Delphos, O.
 Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 185.)
 Ducky—See Automotive Exchange of America Co.
 Eagle Mfg. Co., Wellsburg, W. Va.
 Famasco Distributing Co., 694 Main St., Buffalo, N. Y. (Sole Selling Agents for U. S. All-Way Oiler Co., Waterbury, Conn. "All-Way.") (See page 185.)
 Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.
 Howland—See Maple City Stamping Co.
 Kompact—See Vogel & Bros.
 Lidseen, Gustave, 832-40 S. Central Ave., Chicago, Ill.
 Maple City Stamping Co., 710 Park Ave., Peoria, Ill. "Howland."
 Metal Products Mfg. Co., 121-29 Fifth Ave. S., Minneapolis, Minn. "Thelm."
 Mooers-Wright Co., 1400 Broadway, New York, N. Y. "Beacon." (See page 185.)
 Noera Mfg. Co., 21-97 Griggs St., Waterbury, Conn.
 Richard—See Ansonia Novelty Co.
 Sure Shot—See Buko Oiler Mfg. Co.
 Thiem—See Metal Products Mfg. Co.
 U. S. All-Way Oiler Co.—See Famasco Distributing Co.
 Vogel & Bros., William, 37 S. Ninth St., Brooklyn, N. Y. "Kompact."
 Wall Mfg. Supply Co., P., 720 Preble Ave., Pittsburgh, Pa.
 Walters Mfg. Co., Fulton Bldg., Pittsburgh, Pa.

CANS, Waste

(Receptacles for oily and dirty waste)

Acme Sheet Metal & Mfg. Co., 2643 Lakeside Ave., Cleveland, O.
 Angle Steel Stool Co., Otsego, Mich.
 Atlantic Stamping Co., 180 Ames St., Rochester, N. Y.
 Boyle Mfg. Co., 21 Sutter St., Los Angeles, Cal. (See page 183.)

Central Stamping Co., 173-74 Fulton St., New York, N. Y.
 Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.
 Delphos Mfg. Co., 100-24 S. Pierce St., Delphos, O.
 Diener Mfg. Co., Geo. W., 400-20 Monticello Ave., Chicago, Ill. "Protection."
 Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 185.)
 Durlach Can & Iron Works, 234 Bridge St., Brooklyn, N. Y.
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
 Justrite Mfg. Co., 2061-81 Southport Ave., Chicago, Ill.
 Koven & Bro., L. O., Jersey City, N. J.
 Kraft, A. C., 323-25 W. Lake St., Chicago, Ill. "Nacefas."
 McNutt Can Sales Co., 83 Chambers St., New York, N. Y.
 Nacefas—See Kraft, A. C.
 Protection—See Diener Mfg. Co.
 Sexton Can Co., 123 Broad St., Boston, Mass.
 Solar Metal Products Co., 470 E. Starr Ave., Columbus, O.
 Vogel & Bros., William, 37 S. Ninth St., Brooklyn, N. Y.
 Wall Mfg. Supply Co., P., 720 Preble Ave., Pittsburgh, Pa.
 Walters Mfg. Co., Fulton Bldg., Pittsburgh, Pa.

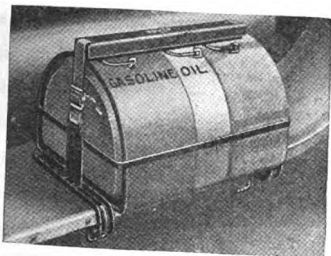
CANTILEVER SPRING SUPPORT CLAMPS—See Clamps, Special Cantilever Spring Support**CANVAS BUCKETS—See Buckets, Collapsible****CANVAS SHIPPING COVERS—See Covers, Paper and Canvas Shipping****CAP LOCKS, RADIATOR—See Locks, Radiator Cap and Thermometer****CAP SCREWS—See Screws, Cap****CAP WRENCHES, VALVE—See Wrenches, Cap Valve****CAPE CHISELS—See Chisels, Cold and Cape****CAPE TOPS—See Tops, Automobile****CAPS, BRASS RADIATOR—See Caps, Brass Radiator and Tank****CAPS, COMPOSITION RADIATOR—See Caps, Rubber or Composition Radiator****CAPS, FRONT AXLE DUST FOR FORDS—See Protectors, Front Wheel Bearing****CAPS, GASOLINE TANK—See Caps, Brass Radiator and Tank****CAPS, Gasoline Tank, for Fords**

(Including both standard and special caps)

Freeman Brass Works, 92 Bowery, New York, N. Y.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
CAPS, GASOLINE TANK FILLER—See Caps, Brass Radiator and Tank; also Caps, Rubber or Composition Radiator

Everything is listed under the NOUN or principal word

BOYCO PRODUCTS



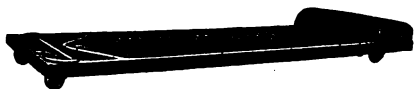
No. 212 (Patented)

Service Units

Boyco Service Units for carrying extra gasoline, oil and water are proven necessities for the motorist. No matter what the locality or road condition, Boyco Service Units protect the motorist against running out of fuel supplies.

Camp Grate

Boyco Camp Grates with their built-in features—a skillet and grid in combination—make an instant appeal to those seeking outdoor pleasure.



Allcar Creeper

Made of heavy perforated steel with substantial caster, comfortable head rest, and two pockets on either side at the end for cotters, bolts, nuts, etc.



Luggage Carriers

The substantial construction and design of Boyco Luggage Carriers has won for them popularity in every section of the country.

BOYLE MANUFACTURING COMPANY

Los Angeles

California



SALES REPRESENTATIVES

Boyle Mfg. Company,
21 Sutter Street,
San Francisco, Cal.

F. H. Chown,
Gasco Building,
Portland, Ore.

Bert G. Cochran Co.,
Great Northern Bldg.,
Chicago, Ill.

C. H. Harbou,
1403 Grand Avenue,
Dallas, Texas.

Chas. M. S. Foster,
243 Columbus Ave.,
Boston, Mass.

Hirsh Sales Corporation,
Nashville, Tenn.

M. J. Orr,
253 West 58th St.,
New York, N. Y.

E. F. Edelbrock,
206 West Tenth St.,
Wilmington, Del.

Please mention The Automobile Trade Directory

CAPS, Hub*(Pressed or Stamped Caps; for Cast Caps—See Castings)*

Aluminum Goods Mfg. Co., 15th & Franklin Sts., Manitowoc, Wis.
 American Brass Co., Waterbury, Conn. (See page 161.)
 Bassick Co., Bridgeport, Conn. (See page 311.)
 Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O.
 Bossert Corp., Utica, N. Y.
 Bridgeport Brass Co., Bridgeport, Conn.
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 507.)
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Crosby Co., Buffalo, N. Y. (See page 813.)
 Konigsfow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 Lindholm Metal Stamping Co., 107-15 Erie St., Camden, N. J.
 Matthews Mfg. Co., H. A., Seymour, Conn.
 Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
 Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa.
 Sterling Sales Co., Auburn, Ind. "Sterlite."
 Sterlite—See Sterling Sales Co.
 Torrey Roller Bushing Works, Bath, Me.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)
 Worcester Stamped Metal Co., Worcester, Mass. (See page 811.)

CAPS, Hub, for Fords*(Including both standard and special caps)*

A-K—See Angsten-Kox Co.
 Angsten-Kox Co., 221-23 W. Randolph St., Michigan City, Ind. "A-K."
 Becco—See Michigan Motor Specialties Co.
 Bowen Products Corp., Auburn, N. Y. "Empress." (See page 313.)
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 507.)
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Empress—See Bowen Products Corp.
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.
 Hyman & Co., Henry, 476 Broadway, New York, N. Y.
 Konigsfow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
 Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Ospeco—See Michigan Auto Products Co.
 Sterling Sales Co., Auburn, Ind. "Sterlite."
 Sterlite—See Sterling Sales Co.
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.
 Vulcan Die Casting Corp., 1126-36 W. Belden Ave., Syracuse, N. Y.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

CAPS, Motorists*(See also Clothing, Motorists)*

Belair Helmet Co., 160 Fifth Ave., New York, N. Y.
 Bishop Co., J. H., Wyandotte, Mich.
 Bradley Knitting Co., Delavan, Wis.
 Dinner Co., Isaac H., 694 Washington St., Boston, Mass.
 Favorite Knitting Mills, 1333 W. Sixth St., Cleveland, O.
 Forman & Co., E., 578 Washington St., Boston, Mass.
 Freeman Co., David, 226 W. Van Buren St., Chicago, Ill.
 Gilbert Mfg. Co., 353 York St., New Haven, Conn.
 Hendrickson Hat Co., A. P., 127-29 S. Meridian St., Indianapolis, Ind.
 Kaplan, Frank, & Dunn, 113-15 University Pl., New York, N. Y.
 Lasky & Levy, 394 Broadway, New York, N. Y.
 Patrick-Duluth Woolen Mills, Duluth, Minn.
 Revillon Freres, 19 W. 34th St., New York, N. Y.
 Spear & Co., Woodhaven, N. Y.

CAPS, NON-EXPLOSIVE TANK-FILLING
—See Tubes, Non-Explosive Tank-Filling**CAPS, Brass Radiator and Tank**

Aero—See Wolkow & Sons.
 Albany Billiard Ball Co., Delaware Ave. & Whitehall Rd., Albany, N. Y.
 American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Jiffy."
 American Brass Co., Waterbury, Conn. (See page 161.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
 Auto Ball Cock Co., Hamlet, Pa.
 Autoware Corp., 441 State St., Detroit, Mich. "Dann."
 Bridgeport Brass Co., Bridgeport, Conn.
 Bridgeport—See Monumental Bronze Co.
 Burns-Croft Co., 2239 Herndon St., Chicago, Ill.
 Bush Mfg. Co., Hartford, Conn. (See page 683.)
 Chief Products Co., 2335 Michigan Ave., Chicago, Ill.
 Cloud Accessories Corp., 1403 S. Wabash Ave., Chicago, Ill.
 Columbus Brass Co., 540 Dublin Ave., Columbus, O.
 Comb, C. B., Walker & State Sts., Indianapolis, Ind.
 Connecticut Lock Co., Fairfield, Conn. (See page 214.)
 Crosby Co., Buffalo, N. Y. (See page 813.)
 Dann—See Autoware Corp.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Rex." (See page 523.)
 Frontier Brass Foundry, 318 Elmwood Ave., Niagara Falls, N. Y.
 Garfield Mfg. Co., Garfield, N. J.
 General Automotive Corp., Wrigley Bldg., Chicago, Ill.
 H & H—See Simplex Wind Shield Wing Co. of Chicago.
 Hansen & Olson Co., 506 S. Green St., Chicago, Ill. (See page 201.)
 Holtum Mfg. Co., Freeport, Ill. (See page 903.)

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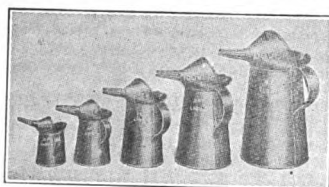


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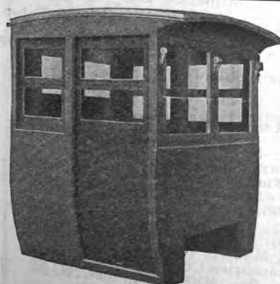
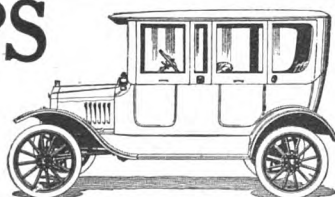


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CAPS, Brass Radiator and Tank (Continued)

Hunt & Co., E. J., Dayton, O. (Sales Representatives for S. H. Thompson Mfg. Co., Dayton, O.)
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Jiffy—See American Auto Products Co.
 Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 Maurer, W. J., 211 E. Stephenson St., Freeport, Ill. (See page 187.)
 Monumental Bronze Co., 354 Howard St., Bridgeport, Conn. "Bridgeport."
 National Gauge & Equipment Co., La Crosse, Wis. (See page 401.)
 Niagara Brass Mfg. Co., Lockport, N. Y.
 North Dayton Pattern Works, 427 Valley St., Dayton, O.
 Plummer, John L., San Francisco, Cal.
 Prime Mfg. Co., Milwaukee, Wis. (See page 187.)
 Rex—See Edelmänn & Co.
 Rust Mfg. Co., Marshalltown, Iowa.
 Seovill Mfg. Co., Waterbury, Conn. (See page 745.)
 Simplex Windshield Wing Co. of Chicago, 2206 S. Michigan Blvd., Chicago, Ill. "H. & H."
 Thomson Mfg. Co., S. H.—See Hunt & Co.
 V. & S. Automatic Bolt Co., 1120 State-Lake Bldg., Chicago, Ill. (See page 147.)
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Weldely Accessories Co., 528 Massachusetts Ave., Indianapolis, Ind.
 Western Brass Mfg. Works, Marshall Blvd. & 31st St., Chicago, Ill. (See page 471.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)
 Wolkow & Sons, F., 150 W. Market St., Louisville, Ky. "Aero."

CAPS, Radiator, for Fords

(Including both standard and special caps)

Adco—See American Automatic Devices Co.
 Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
 American Automatic Devices Co., Chicago, Ill. "Adco." (See page 251.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
 Auto Ball Cock Co., Hazelton, Pa.
 Bergwald Mfg. Co., 21-33 E. Fourth St., New York, N. Y.
 Bowen Products Corp., Auburn, N. Y. "Empress." (See page 313.)
 Burns-Croft Co., 2239 Herndon St., Chicago, Ill.
 Chief Products Co., 2335 Michigan Ave., Chicago, Ill.
 Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O. "Peerless."
 Edelmänn & Co., E., 2038 N. Crawford Ave., Chicago, Ill. "Rex." (See page 523.)
 Empress—See Bowen Products Corp.
 Fxyzll—See Walker Mfg. Co.
 Fracto Inc., 161 Massachusetts Ave., Boston, Mass.
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 Frontier Brass Foundry, 313 Elmwood Ave., Niagara Falls, N. Y.
 General Automotive Corp., Wrigley Bldg., Chicago, Ill.
 Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 933.)
 H & H—See Simplex Wind Shield Wing Co. of Chicago.

Hansen & Olson Co., 506 S. Green St., Chicago, Ill. (See page 201.)
 Holtum Mfg. Co., Freeport, Ill. (See page 903.)
 Home Light Co., 3351 Milwaukee Ave., Chicago, Ill.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 King—See Palmyra Mfg. Co.
 Maurer, W. J., 211 E. Stephenson St., Freeport, Ill. (See page 187.)
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Niagara Brass Mfg. Co., Lockport, N. Y.
 Palmyra Mfg. Co., Palmyra, Pa. "King."
 Peerless—See Corcoran Mfg. Co.
 Plummer, John L., San Francisco, Cal.
 Radiator Funnel Cap Co., 3852 Grand Blvd., Chicago, Ill.
 Rex—See Edelmänn & Co.
 Simplex Windshield Wing Co. of Chicago, 2206 S. Michigan Blvd., Chicago, Ill. "H. & H."
 Stout's Mfg. Co., Lockport, N. Y.
 Vulcan Die Casting Corp., 1126-36 W. Belden Ave., Syracuse, N. Y.
 Western Brass Mfg. Works, Marshall Blvd. & 31st St., Chicago, Ill. (See page 471.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

CAPS, Rubber or Composition Radiator

Aico—See American Insulator Corp.
 American Hard Rubber Co., 11 Mercer St., New York, N. Y.
 American Insulator Corp., New Freedom, Pa. "Aico." (See page 187.)
 Belden Mfg. Co., 2300 South Western Ave., Chicago, Ill. (See page 187.)
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
 General Insulate Co., 1008 Atlantic Ave., Brooklyn, N. Y.
 International Insulating Corp., ft. Mechanic St., Springfield, Mass.
 Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.
 Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.
 Niagara Insul-Bake Specialty Co., 433-93 Delaware Ave., Albany, N. Y.
 Pouvalsmith Corp., Smith St., Poughkeepsie, N. Y. "Povasco."
 Povasco—See Pouvalsmith Corp.
 Stokes Rubber Co., Jos. Taylor St., Trenton, N. J.
 Vitalic—See Continental Rubber Works.

CAPS, TANK—See Caps, Brass Radiator

CAPS, TANK, FOR FORDS—See Caps, Gasoline Tank

CAPS, Tire Dust Valve

Automatic Safety Tire Valve Corp., 1753-55 Broadway, New York, N. Y. "Lox-On."
 Gray-Hofman Co., 542-548 North Parkside Ave., Chicago, Ill. "Sturdy." (See page 265.)
 Harris Co., 89 State St., Boston, Mass. (Sole Distributors for Pushpull Valve Cap Co., Boston, Mass.)
 Ideal Accessories Corp., Portland, Ore.
 Just Mfg. Co., A. L., Syracuse, N. Y. "Nu-Way."
 Lemings—See Le Ril Mfg. Co.

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CAPS, Tire Dust Valve (Continued)

Le Rill Mfg. Co., 98 Massachusetts Ave., Boston, Mass. "Lemings."

Lox-On—See Automatic Safety Tire Valve Corp.

Nu-Way—See Just Mfg. Co.
Pushpull Valve Cap Co.—See Harris Co.

Schrader's Son, A., Brooklyn, N. Y.
(See page 241.)

Sturdy—See Gray-Hofman Co.

CAR BEDS—See Beds or Berths, Car

CAR BERTHS—See Beds or Berths, Car

CAR CURTAINS, CLOSED, FOR FORDS—
See Curtains, Closed Car

CAR LIFTING JACKS—See Jacks, Car
Lifting

CAR LOADERS—See Loaders, Truck

CAR OVERALLS—See Covers, Fender

CAR PROTECTORS—See Covers, Fender

CAR RAISING SKIDS—See Skids, Car
Raising

CAR REPORTS—See Reports, Used Car
Market

CAR SHIPPING BLOCKS—See Checks,
Blocks and Clamps, Car Shipping

CAR SHIPPING CHOCKS—See Checks,
Blocks and Clamps, Car Shipping

CAR SHIPPING CLAMPS—See Checks,
Blocks and Clamps, Car Shipping

CAR WASHING BRUSHES—See Washers,
Vehicle

CAR WIRING CONDUITS—See Conduit,
Flexible Car Wiring

CARBIDE, Calcium

American Carbolite Sales Co., 301 S. 55th Ave.,
W., Duluth, Minn. "Carbolite."

Carbolite—See American Carbolite Sales Co.
Union Carbide Sales Co., 123 S. Michigan
Blvd., Chicago, Ill.

CARBON BURNING OUTFITS—See Ma-
chines, Motor Decarbonizing

CARBON REMOVERS—See Compounds,
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CARBON REMOVING COMPOUNDS—See
Compounds, Carbon Removing

CARBON REMOVING MACHINES—See
Machines, Engine Decarbonizing

CARBON SCRAPERS—See Scrapers, Car-
bon

CARBONIA FINISH—See Treating, Heat

CARBORUNDUM PAPER—See Paper,
Emery and Sand

CARBORUNDUM WHEELS—See Wheels,
Grinding

CARBURETOR CONTROLS—See Controls,
Dash and Steering Column Carburetor

CARBURETOR CONTROLS FOR FORDS
—See Controls, Dash Carburetor

CARBURETOR FLOATS—See Floats

CARBURETOR INTAKE STRAINERS—See
Cleaners, Air

**CARBURETOR REGULATORS FOR
FORDS**—See Regulators, Thermostatic
Carburetor

CARBURETORS, Gasoline

(For Mixing Valves or Vaporizers—See Vaporizers)

Aero Products Co.—See Gill Mfg. Co.

Air-Friction Carburetor Co., First & Mad-
ison Sts., Dayton, O.

American Auto Products Co., 340-44 S. Broad-
way, Denver, Colo. "J. B. J. Metro."

Ames Carburetor Co., 1512-14 Clark St., Ra-
cine, Wis.

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
Ball & Ball—See Penberthy Injector Co.

Ball Spray—See Shain, Chas. D.

Beacon Bronze Co., Beacon, N. Y. "Tel-
mie." (See page 486.)

Beneke & Kropf Mfg. Co., 2559 W. 21st St.,
Chicago, Ill. "Rayfield."

Bennett—See Wilcox-Bennett Carburetor Co.
Booty Carburetor Mfg. Co., 554 W. Harrison
St., Chicago, Ill.

Brandenburg Bros. & Eccleston, 1112 S.
Michigan Ave., Chicago, Ill. (Sole Dis-
tributors for McFell Signal Co., Chicago,
Ill. "Gilles.")

Briscoe Devices Co., 212 Osmun St., Pontiac,
Mich. "Scoe."

Brown Carburetor Co., 347 Madison Ave.,
New York, N. Y.

Byrne, Kingston & Co., Kokomo, Ind., "Kings-
ton."

Caloretor—See Vaporator Corp.

Camden Anchor-Rockland Machine Co., Me-
chanics St., Camden, Me. "Knox."

Cammen Laboratories Co., 42 W. 39th St.,
New York, N. Y. "Jetsajet."

Carter Carburetor Co., 2835-40 N. Spring Ave.,
St. Louis, Mo.

Columbia Carburetor Co., 111 W. Monroe
St., Chicago, Ill. (See page 193.)

Courtesy Service & Sales Co., 1302 S.
Wabash Ave., Chicago, Ill. (Chicago
Distributors for Columbia Carburetor
Co., Chicago, Ill.) (See page 197.)

D. K. W.—See Duquesne Auto Accessory Co.
Daley, Walter A., 3520 Melrose St., Chicago,
Ill.

Detroit Lubricator Co., 5343-5986 Trumbull
Ave., Detroit, Mich. "Stewart."

Disco Electric Mfg. Co., 2100 Howard St., De-
troit, Mich. "Van Briggie."

Douglas Auto-Appliance Co., 2845 Chicago
Ave., Minneapolis, Minn.

Duquesne Auto Accessory Co., New Kensington,
Pa. "D. K. W."

Eagle Carburetor Co., 11503 Madison Ave.,
N. W., Cleveland, O.

Ensign Carburetor Co., E. 17th St., Los
Angeles, Cal. (See page 193.)

Ess-Ess—See Scott & Sons Co.

Everything is listed under the NOUN or principal word


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In Every Part of the United States and
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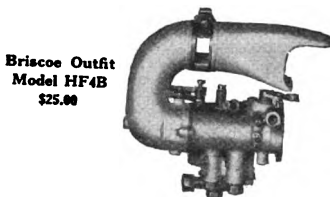
Ala.—Birmingham, Coplon Auto Co.
Ark.—Little Rock, Holman & Moseley
Calif.—San Francisco, Lathan Auto Supply Co.
Colo.—Denver, Gall Auto Specialty Co.
Fla.—St. Petersburg, Geo. N. Goodrich.
Ga.—Atlanta, Atlanta Electric Service Co.
Ill.—Chicago, Zenith Carburetor Co., 2000 Wabash
Avenue
Iowa—Cedar Rapids, Electric Service Co.
Ind.—Indianapolis, A. Chevrolet
Ky.—Louisville, Broadway Motor Sales Co.
La.—New Orleans, J. K. Rippard
Mass.—Springfield, E. B. Atmus
Mich.—Detroit, Auto Electric and Service Corp.
Grand Rapids, Heth Auto Electric Co.
Mo.—Kansas City, Electric Products Co.
St. Louis, Automotive Engineering Co.
Minn.—Duluth, Kelly-Duluth Co.
Minneapolis, General Motor Service Co.
Mont.—Helena, W. E. Chase Engineering Co.
Nebr.—Omaha, Paxton & Gallagher Co.
N. Y.—Albany, J. M. Steinhardt, Inc.
Brooklyn, General Carburetor Sales Co.
Buffalo, Henry & Ferguson, Inc.
New York City, Zenith Carburetor Co., 692 11th
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Rochester Starter & Ignition Service Co.
Syracuse, Burr-Fowler Co.
N. C.—Fayetteville, Fayetteville Storage Bat. Co.
N. J.—Newark, John H. Wills Sales Co.
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Ore.—Portland, U. S. Manufacturers' Sales Co.
Okla.—Oklahoma City, Johnson Electric Co., Inc.
Penna.—Philadelphia, McCarthy Bros. & Wilson,
Inc.
S. C.—Columbia, Carolina Tire & Accessory Co.
S. D.—Sioux Falls, H. F. Brownell Co.
Tenn.—Chattanooga, Mudge Auto Electric Co.
Knoxville, R. T. Clapp Battery Co.
Memphis, Automotive Electric & Service Co.
Nashville, Matthew Auto Repair Co.
Texas—El Paso, Automobile Parts Co.
Fort Worth, Starter Service Co.
Houston, Hurlburt-Sill Electric Co.
San Antonio, Westbrook Motor Co.
Utah—Salt Lake City, J. Louis Anderson
Va.—Richmond, W. M. Reynolds, Inc.
Norfolk, Carburetor Specialty Co.
Wash.—Seattle, Sunset Electric Co.
Spokane, Wm. E. Chase Engr. Co.
Wis.—Madison, Automotive Electric Service
Milwaukee, Wisconsin Magneto Co.
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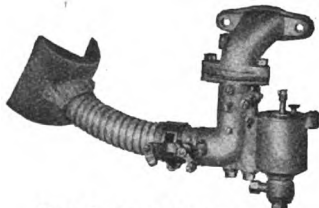
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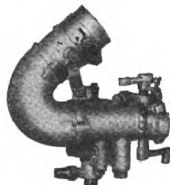


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Dort Outfit—Model O4, \$22.50

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- Gardner Auto Products Co., Detroit, Mich. (Sole Distributors for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 323.)
- Gardner Carburetor & Brass Works—See Gardner Auto Products Co.
- Gill Mfg. Co., 8300 S. Chicago Ave., Chicago Ill. (Sole Distributors for Aero Products Co., Cleveland, O.) (See pages 709 and 710.)
- Gilles—See Brandenburg Bros. & Eccleston.
- Heath Products Corp., Lincoln Bldg., Detroit, Mich.
- Heco—See Heinze Electric Co.
- Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."
- Hess Mercury Carburetor Mfg. Co., Valparaiso, Ind.
- Holley Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.
- Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Newcomb."
- J. B. J. Metro—See American Auto Products Co.
- Jetajet—See Cammen Laboratories Co.
- Johnson Co., 1909 E. Forest Ave., Detroit, Mich.
- Juhasz Carburetor Co., 244 W. 49th St., New York, N. Y.
- Jupiter—See Orem Motor Protector Co.
- Justrite—See Wilcke-Armstrong Co.
- Kemp, J. P., 418 Evesham Ave., Baltimore, Md.
- Kingston—See Bryne, Kingston & Co.
- Knox—See Camden Anchor-Rockland Machine Co.
- L. H. P. Products Co., 189 N. Clark St., Chicago, Ill.
- Lacharnay—See Lyons Ignition Co.
- Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa. "Parkin."
- Lyons Ignition Co., News Bldg., Paterson, N. J. "Lacharnay."
- M. T.—See Sunderman Corp.
- McCarthy Bros. & Wilson, 2241 N. Broad St., Philadelphia, Pa. (Penn., Del., Md., N. J., Va. and Dist. of Col. Distributors for Zenith Carburetors.) (See page 715.)
- Manning Carburetor Co., Janesville, Wis.
- McFell Signal Co.—See Brandenburg Bros. & Eccleston.
- Marvel Carburetor Co., Flint, Mich. (See pages 191 and 197.)
- Master Carburetor Co., Los Angeles, Cal. (See page 191.)
- Miller Mfg. Co., Harry A., 17th & Los Angeles Sts., Los Angeles, Cal.
- National Auto Accessory Co., Salem Depot, N. H.
- Newcomb—See Holtzer-Cabot Electric Co.
- Niehoff Mfg. Co., Jonas, 4845 S. Vermont St., Los Angeles, Cal. "Stafford."
- Nitro—See Sunderman Corp.
- North Chicago Machine Co., Commonwealth Ave. & 23d St., North Chicago, Ill. "Palmba."
- Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md. "Jupiter."
- Palmba—See North Chicago Machine Co.
- Parkin—See Light Mfg. & Foundry Co.
- Penberthy Injector Co., Detroit, Mich. "Ball & Ball." (See page 407.)
- Rayfield—See Beneke & Kropf Mfg. Co.
- Reld, David, 25 Liberty St., Buffalo, N. Y. "Steinbrenner."
- Schebler—See Wheeler-Schebler Carburetor Co.
- Scoe—See Briscoe Devices Co.
- Scott & Sons Co., Medford, Mass. "Ess-Ess."
- Shain, Chas. D., Brooklyn, N. Y. "Ball Spray."
- Shakespeare Co., N. Pitcher St., Kalamazoo, Mich.
- Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 257.)
- Stafford—See Niehoff Mfg. Co.
- Steinbrenner—See Reld, David.
- Stewart—See Detroit Lubricator Co.
- Stokes Carburetor Co., 384 E. 133d St., New York, N. Y.
- Stromberg Motor Devices Co., Dept. 1020, 64 E. 25th St., Chicago, Ill. (See page 193.)
- Sunderman Corp., Newburgh, N. Y. "M. T.," "Nitro." (See page 191.)
- Swan—See Yale & Towne Mfg. Co.
- Thermo Carburetor Co., 3127 W. Harrison St., Chicago, Ill.
- Tillotson Mfg. Co., Toledo, O.
- Tolmie—See Beacon Bronze Co.
- Toquet Carburetor Corp., Westport, Conn. (See page 191.)
- Trader & Co., R. V., 314 Atlantic Ave., McKeesport, Pa.
- U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.
- Van Briggie—See Disco Electric Mfg. Co.
- Vaporator Corp., 221 Grand Ave., Milwaukee, Wis. "Caloretor."
- Webber Carburetors, Inc., 66-68 Stanhope St., Boston, Mass.
- Welch Motor Equipment Co., 773 Central Ave., Los Angeles, Cal.
- Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 197.)
- Wilcox-Bennett Carburetor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."
- Wilcke-Armstrong Co., 3139 Monroe Ave., Detroit, Mich. "Justrite."
- Yale & Towne Mfg. Co., Stamford, Conn. "Swan." (See page 540.)
- Zenith Carburetor Co., Detroit, Mich. (See page 189.)

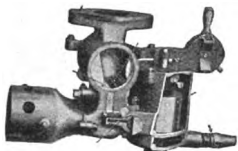
CARBURETORS, Gasoline, for Fords

- Air Friction Carburetor Co., First & Madison Sts., Dayton, O.
- Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
- Ball-Spray—See Shain, Chas. D.
- Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield."
- Booty Carburetor Mfg. Co., 554 W. Harrison St., Chicago, Ill.
- Briscoe Devices Co., 212 Osmun St., Pontiac, Mich. "Scoe."
- Byrne, Kingston & Co., Kokomo, Ind. "Kingston."
- Camden Anchor-Rockland Machine Co., Mechanics St., Camden, Me. "Knox."
- Carter Carburetor Co., 2838-40 N. Spring Ave., St. Louis, Mo.
- Columbia Carburetor Co., 111 W. Monroe St., Chicago, Ill. (See page 193.)
- D. & B.—See Harrington Co.
- Detroit Lubricator Co., 5342-5936 Trumbull Ave., Detroit, Mich. "Stewart."
- Disco Electric Mfg. Co., 2100 Howard St., Detroit, Mich. "Van Briggie."
- Douglas Auto-Apppliance Co., 2845 Chicago Ave., Minneapolis, Minn.
- Duntley—See Little Giant Truck Co.

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W. S. Nett Co. Seattle, Wash.
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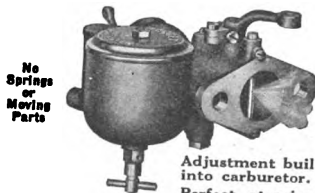
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CARBURETORS, Gasoline, for Fords (Continued)

Ensign Carburetor Co., E. 17th St., Los Angeles, Cal. (See page 193.)
 Famasco Distributing Co., 694 Main St., Buffalo, N. Y. (Sole Selling Agents for Mayer Carburetor Co., Buffalo, N. Y.)
 Gardner Auto Products Co., Detroit, Mich. (Sole Distributors for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 323.)
 Gardner Carburetor & Brass Works—See Gardner Auto Products Co.
 Griffin—See Lyons Devices Co.
 Harrington Co., O. C., 4138 Fillmore St., Chicago, Ill. "D. & B."
 Heath Products Corp., Lincoln Bldg., Detroit, Mich.
 Heco—See Heinze Electric Co.
 Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."
 Holley Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.
 Johnson Co., 1909 E. Forest Ave., Detroit, Mich.
 Jupiter—See Orem Motor Protector Co.
 Justrite—See Wilcke-Armstrong Co.
 Kingston—See Byrne, Kingston & Co.
 Knox—See Camden Anchor-Rockland Machine Co.
 Little Giant Truck Co., Little Giant Bldg., Chicago, Ill. "Duntley."
 Lyons Devices Co., 197 Paterson St., Paterson, N. J. "Griffin."
 M. T.—See Sunderman Corp.
 Marvel Carburetor Co., Flint, Mich. (See pages 191 and 197.)
 Master Carburetor Co., Los Angeles, Cal. (See page 191.)
 Mayer Carburetor Co.—See Famasco Distributing Co.
 McCarthy Bros. & Wilson, 2241 N. Broad St., Philadelphia, Pa. (Penn., Del., Md., N. J., Va. and Dist. of Col. Distributors for Zenith Carburetors.) (See page 715.)
 Miller Mfg. Co., Harry A., 17th & Los Angeles Sts., Los Angeles, Cal.
 Niehoff Mfg. Co., Jonas, 4845 S. Vermont St., Los Angeles, Cal. "Stafford."
 Nitro—See Sunderman Corp.
 North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill. "Palmbia."
 Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md. "Jupiter."
 Palmbia—See North Chicago Machine Co.
 Rayfield—See Bencke & Kropf Mfg. Co.
 Reid, David, 25 Liberty St., Buffalo, N. Y. "Steinbrenner."
 Schebler—See Wheeler-Schebler Carburetor Co.
 Scoe—See Briscoe Devices Co.
 Shain, Chas. D., Brooklyn, N. Y. "Ball-Spray."
 Shakespeare Co., N. Pitcher St., Kalamazoo, Mich.
 Stafford—See Niehoff Mfg. Co.
 Steinbrenner—See Reid, David.
 Stewart—See Detroit Lubricator Co.
 Stokes Carburetor Co., 384 E. 133rd St., New York, N. Y.
 Stromberg Motor Devices Co., Dept. 1020, 64 E. 25th St., Chicago, Ill. (See page 193.)
 Sunderman Corp., Newburgh, N. Y. "M. T.," "Nitro." (See page 191.)
 Thermo Carburetor Co., 3127 W. Harrison St., Chicago, Ill.
 Tillotson Mfg. Co., Toledo, O.
 Toquet Carburetor Corp., Westport, Conn. (See page 191.)

U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.
 Van Briggel—See Disco Electric Mfg. Co.
 Webber Carburetors, Inc., 66-68 Stanhope St., Boston, Mass.
 Webber Mfg. Co., 66-68 Stanhope St., Boston, Mass.
 Welch Motor Equipment Co., 773 Central Ave., Los Angeles, Cal.
 Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 197.)
 Wilcke-Armstrong Co., 3199 Monroe Ave., Detroit, Mich. "Justrite."
 Zenith Carburetor Co., Detroit, Mich. (See page 189.)

CARBURETORS, Kerosene

Atkins Co., E. G. 26 E. Sixth St., Mansfield, O.
 Bennett—See Wilcox-Bennett Carburetor Co.
 Camden Anchor-Rockland Machine Co., Mechanics St., Camden, Me. "Knox."
 Cammen Laboratories Co., 43 W. 39th St., New York, N. Y. "Jetajet."
 Columbia Carburetor Co., 111 W. Monroe St., Chicago, Ill. (See page 193.)
 Conservation Carburetor Co., Citizens Nat'l Bank Bldg., Des Moines, Ia.
 Dual Carburetor & Mfg. Co., Superior Ave. & E. 49th St., Cleveland, O.
 Ensign Carburetor Co., E. 17th St., Los Angeles, Cal. (See page 193.)
 Good Inventions Co., 271 37th St., Brooklyn, N. Y.
 Holley Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.
 Ingram Motor Co., 1041-D Bay St., Rosebank, S. I., N. Y.
 Jetajet—See Cammen Laboratories Co.
 Knox—See Camden Anchor-Rockland Machine Co.
 L. H. P. Products Co., 189 N. Clark St., Chicago, Ill.
 Linga—See Specialty Brass Co.
 Master Carburetor Co., Los Angeles, Cal. (See page 191.)
 Nitro—See Sunderman Corp.
 Senrab Carburetor Co., Sea Cliff, N. Y.
 Specialty Brass Co., S. Howland Ave., Kenosha, Wis. "Linga."
 Stromberg Motor Devices Co., Dept. 1020, 64 E. 25th St., Chicago, Ill. (See page 193.)
 Sunderman Corp., Newburgh, N. Y. "Nitro." (See page 191.)
 Tillotson Mfg. Co., Toledo, O.
 Trader & Co., R. V., 314 Atlantic Ave., McKeesport, Pa.
 Wilcox-Bennett Carburetor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CARBURETORS, Kerosene, for Fords

(For Fuel or Mixture Heaters—see Heaters, Mixture; for Special Jacketed Manifolds—see Manifolds, Special and Jacketed)
 Atkins Co., E. G. 26 E. Sixth St., Mansfield, O.
 Columbia Carburetor Co., 111 W. Monroe St., Chicago, Ill. (See page 193.)
 Frankfort Carburetor Co., Frankfort, Ind.
 Henner Automatic Oil Carburetor Co., 1000 E. Main St., Rochester, N. Y.
 M. T.—See Sunderman Corp.
 Master Carburetor Co., Los Angeles, Cal. (See page 191.)
 Nitro—See Sunderman Corp.
 Sunderman Corp., Newburgh, N. Y. "M. T.," "Nitro." (See page 191.)

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Los Angeles: East 17th St.

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Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
 Bencke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield."
 Bennett—See Wilcox-Bennett Carburetor Co.
 Booty Carburetor Mfg. Co., 554 W. Harrison St., Chicago, Ill.
 Byrne, Kingston & Co., Kokomo, Ind. "Kings-ton."
 Camden Anchor-Rockland Machine Co., Mechanics St., Camden, Me. "Knox."
 Carter Carburetor Co., 2335-40 N. Spring Ave., St. Louis, Mo.
 Ensign Carburetor Co., E. 17th St., Los Angeles, Cal. (See page 193.)
 Generator Valve Co., 47 Dinmore Pl., Brooklyn, N. Y. "James-Acorn."
 Heath Products Corp., Lincoln Bldg., Detroit, Mich.
 Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Newcomb."
 James-Acorn—See Generator Valve Co.
 Kingston—See Byrne-Kingston Co.
 Knox—See Camden Anchor-Rockland Machine Co.
 Knox Motors Associates, Springfield, Mass.
 Marvel Carburetor Co., Flint, Mich. (See pages 191 and 197.)
 Master Carburetor Co., Los Angeles, Cal. (See page 191.)
 Miller Mfg. Co., Harry A., 17th & Los Angeles Sts., Los Angeles, Cal.
 Newcomb—See Holtzer-Cabot Electric Co.
 Niehoff Mfg. Co., Jonas, 4845 S. Vermont St., Los Angeles, Cal. "Stafford."
 North Chicago Machine Co., Commonwealth Ave. & 23d St., North Chicago, Ill. "Palmbila."
 Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.
 Palmbila—See North Chicago Machine Co.
 Rayfield—See Bencke & Kropf Mfg. Co.
 Schebler—See Wheeler-Schebler Carburetor Co.
 Shain, Chas. D., Brooklyn, N. Y.
 Shakespeare Co., Kalamazoo, Mich.
 Stafford—See Niehoff Mfg. Co.
 Stromberg Motor Devices Co., Dept. 1020, 64 E. 25th St., Chicago, Ill. (See page 193.)
 Sunderman Corp., Newburgh, N. Y. (See page 191.)
 Thermo Carburetor Co., 3127 W. Harrison St., Chicago, Ill.
 U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.
 Webber Carburetors, Inc., 66-68 Stanhope St., Boston, Mass.
 Welch Motor Equipment Co., 773 Central Ave., Los Angeles, Cal.
 Wheeler-Schebler Carburetor Co., Indianapolis, Ind. "Schebler." (See page 197.)
 Wilcox-Bennett Carburetor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."
 Zenith Carburetor Co., Detroit, Mich. (See page 189.)

CARBURETORS, Tractor Kerosene

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.
 Bennett—See Wilcox-Bennett Carburetor Co.
 Camden Anchor-Rockland Machine Co., Camden, Me. "Knox."
 Ensign Carburetor Co., E. 17th St., Los Angeles, Cal. (See page 193.)
 Holley Carburetor Co., Vancouver Ave. & P. M. R. B., Detroit, Mich.
 Ingram Motor Co., 1041-D Bay St., Rosebank, S. I., N. Y.
 Kero-Karburetor—See Western Carburetor Co.
 Knox—See Camden Anchor-Rockland Machine Co.

Master Carburetor Co., Los Angeles, Cal. (See page 191.)
 Neverfall Carburetor Co., 200 Jackson Ave., Long Island City, N. Y.
 Western Carburetor Co., Alma, Mich. "Kero-Karburetor."
 Wilcox-Bennett Carburetor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."

CARPET BINDING—See Binding, Mat and Carpet**CARPET, Coach**

(See also Trimmings, Cloth and Carpet)

Amber—See Sloane, W. & J.
 Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
 Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. (See page 305.)
 Cochrane Mfg. Co., East Dedham, Mass.
 Dobson, John & James, 899 Chestnut St., Philadelphia, Pa.
 Highspire—See Sloane, W. & J.
 Hirst-Roger Co., Philadelphia, Pa. (See page 195.)
 Magee Carpet Co.—See Mantell & Taylor.
 Mantell & Taylor, Detroit, Mich. (Sole Distributors for Magee Carpet Co., Bloomsburg, Pa.)
 Masland & Sons—See Sloane, W. & J.
 Midland Fabrics Co., 228 W. 58th St., New York, N. Y. (Distributors.) (See page 303.)
 Mohawk Carpet Mills—See Sloan, W. & J.
 Overbrook Carpet Co.—See Poulson & Co.
 Poulson & Co., Charles W., 133 Fifth Ave., New York, N. Y. (Sole Distributors for Overbrook Carpet Co., Philadelphia, Pa.) (See page 195.)
 Schofield, Mason & Co., Fairhill, Reese & Cumberland Sts., Philadelphia, Pa.
 Sloane, W. & J., 571 Fifth Ave., New York, N. Y. (Sole Distributors for C. H. Masland & Sons, Carlisle, Pa. "Highspire," "Amber," also Mohawk Carpet Mills, Amsterdam, N. Y.) (See pages 195, 517 and 535.)
 Strongtex—See Strong Textile Co.
 Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 257.)

CARPET MATS—See Mats, Carpet; also Carpet**CARPET TRIMMINGS—See Trimmings, Cloth and Carpet****CARRIAGE BOLTS—See Bolts, Machine****CARRIERS, DEMOUNTABLE WHEEL FOR FORDS—See Holders, Spare Wheel****CARRIERS, LUGGAGE—See Racks, Trunk; also Bags, Coat Rail; also Holders, Suit Case; also Trunks****CARRIERS, SPARE WHEEL FOR FORDS—See Holders, Spare Wheel****CARRIERS, Storage Battery**

A. G.—See Battery Equipment & Supply Co.
 American Bureau of Engineering, 1609 S. Michigan Ave., Chicago, Ill. (See page 147.)
 Battery Equipment & Supply Co., 1458 Michigan Ave., Chicago, Ill. "A. G." (See page 323.)
 Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.
 Shontz Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (See page 151.)

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CASE-HARDENING COMPOUNDS—See Compounds, Case-Hardening

CASE-HARDENING FURNACES—See Furnaces, Annealing

CASE-HARDENING MATERIALS—See Compounds, Case-Hardening

CASES, ACCIDENT—See Cases, Medical Emergency

CASES, BATTERY—See Boxes, Battery

CASES, Bolt and Screw

(See also Cabinets, Accessory)

American Bolt & Screw Case Co., Davies Bldg., Dayton, O.

H-B—See Hobart Bros. Co.

Heller & Co., W. C., Wabash Ave., Montpelier, O.

Hobart Bros. Co., Troy, N. Y. "H-B."

New Britain Machine Co., Chestnut St., New Britain, Conn.

Stevens & Co., 375 Broadway, New York, N. Y. (Distributors.) (See page 197.)

CASES, BULB—See Cases, Extra Lamp Bulb

CASES, CARD—See Cases, Toilet

CASES, Curtain, for Fords

(Leather or fabric bags or cases for carrying top or storm curtains)

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."

CASES, EMERGENCY—See Cases, Medical Emergency

CASES, Extra Lamp Bulb

(Cases or boxes for carrying spare lamp bulbs on car)

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y.

Campbell—See Perkins-Campbell Co.

Connecticut Telephone & Electric Co., Meriden, Conn. (See page 288.)

Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 185.)

Globe Machine & Stamping Co., Cleveland, O. (See page 155.)

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)

CASES, LAMP—See Cases, Extra Lamp Bulb

CASES, LUGGAGE, FOR FORDS—See Bags, Luggage

CASES, LUNCHEON—See Hampers, Touring

CASES, Medical Emergency

First Aid Equipment Co., 16 E. 32d St., New York, N. Y.

Wilford Hall Laboratories, Portchester, N. Y.

CASES, PLUG—See Cases, Spark Plug

CASES, SCREW—See Cases, Bolt and Screw

CASES, SPARK COIL—See Boxes, Spark Coil

CASES, Spark Plug

(Leather or fabric cases for holding spare plugs)

Algo—See Auburn Leather Goods Co.

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)

Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Algo."

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)

Bemco—See B. E. Mfg. Co.

Campbell—See Perkins-Campbell Co.

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Texas.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)

Powers Mfg. Co., Waterloo, Iowa. (See page 530.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

CASES, TIRE—See Covers, Spare Tire

CASES, Toilet and Card

(For Showrooms or other closed cars)

Art Work Shop, 828-36 E. Ferry St., Buffalo, N. Y. (See page 327.)

Cowles & Co., C., New Haven, Conn. (See page 451.)

English & Mersick Co., New Haven, Conn. (See page 539.)

Kraft & Sons, Theo., 458 W. Broadway, New York, N. Y.

Mt. Vernon Metal Products Co., Third Ave. & Seventh St., Mt. Vernon, N. Y.

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Rumpp & Sons, C. F., Fifth & Cherry Sts., Philadelphia, Pa.

Seco—See Spielman Electric Co.

Shepard Art Metal Co., Detroit, Mich. (See page 451.)

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 257.)

Spielman Electric Co., 1931 Broadway, New York, N. Y. "Seco."

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)

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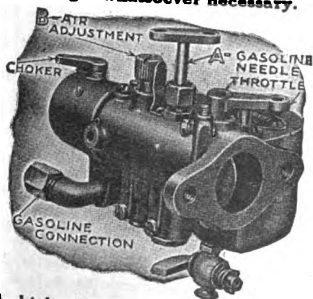
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CASINGS, RADIATOR—See Hoods, Radiator

CASES, TOOL—See Bags, Tool; also Boxes, Tool

CASES, TUBE—See Covers, Spare Tire

CAST IRON CEMENT—See Cement, Cast Iron

CAST STEEL WHEELS—See Wheels, Cast Steel

CASTINGS, Aluminum

Acme Brass Works, 8211 Collins Ave., Detroit, Mich.

Acme Works, Ohio & Delaware Sts., Indianapolis, Ind.

Active Castings Co., 1008 Maple St., Detroit, Mich.

Adams & Westlake Co., Chicago, Ill. "Adlake." (See page 507.)

Adlake—See Adams & Westlake Co.

Adrian Brass & Aluminum Casting Co., Adrian, Mich.

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

Albrass Co., Coxsackie, N. Y.

Alloy Foundry & Machine Corp., 73 Cedar St., New Rochelle, N. Y.

Aluminite—See Green Engineering Co.

Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O. "Lynite."

Aluminum Foundry Co., Bauch St., Sebring, O.

American Brass & Iron Co., Detroit, Mich. (See page 203.)

American Foundry Co., 624 S. 11th St., Newark, N. J.

American Non-Ferrous Metals Corp., Chester, Pa.

Amesbury Brass & Foundry Co., Amesbury, Mass.

Anderson Foundry Co., Wm. B., 24-30 S. Clinton St., Chicago, Ill. "W. B."

Ashland Brass Foundry, Virginia Ave., Ashland, O.

Atlas Brass Foundry Co., Columbus, O. (See page 551.)

Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.

Beacon Bronze Co., Beacon, N. Y. "Tonite." (See page 486.)

Beere Iron & Wire Works, 294-96 Taaffe Pl., Brooklyn, N. Y.

Bergen Point Brass Foundry, 161 Hobart Ave., Bayonne, N. J.

Blake, Edwin J., 565 Windsor St., Hartford, Conn.

Bohn Foundry Co., Chas. B., 3651 Hart Ave., Detroit, Mich.

Brass & Bronze Castings Co., 6515 Carnegie Ave., S. E., Cleveland, O.

Bridgeport Deoxidized Bronze & Metal Co., 459 Iranistan Ave., Bridgeport, Conn.

Brown Bros., 46-48 Garden St., Stamford, Conn.

Buffalo Non-Ferrous Casting & Mfg. Co., 41 Letchworth St., Buffalo, N. Y. "Higrade."

Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 175.)

C & C Sales Corp., 1755 Broadway, New York, N. Y. (Distributors.) (See page 203.)

Caskey's Brass & Bronze Works, Richmond & York Sts., Philadelphia, Pa.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)

Champion Brass Works, Coldwater, Mich. (See page 214.)

Chicago Standard Parts Co., 89 W. Adams St., Chicago, Ill. (Distributors.) (See page 121.)

City Brass Foundry, 21 Slater Ave., Pawtucket, R. I.

City Brass Foundry Co., 5318 St. Clair Ave., N. E., Cleveland, O.

Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 471.)

Cleveland Aluminum Casting Co., 901 Addison Rd., Cleveland, O.

Cochrane Brass Foundry Co., S. Richland Ave. & No. Central Tracks, York, Pa.

Columbia Castings Co., 111 Ferdinand Ave., Detroit, Mich.

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Connecticut Brass Foundry Co., 660 E. Main St., Waterbury, Conn.

Cope-Swift Co., McDougall Ave. & Wight St., Detroit, Mich. (See page 367.)

Cramp & Sons Ship & Engine Building Co., Wm., Philadelphia, Pa. (See page 199.)

D'Este Co., Julian, 26 Canal St., Boston, Mass.

Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.

Diamond Brass Foundry & Machine Co., 1115 Washington Blvd., Chicago, Ill.

Dorchester Brass & Aluminum Foundry, Old Sturtevant Bldg. (Jamaica Plain), Boston, Mass.

Electric Materials Co., North East, Pa.

Ellison Brass Mfg. Co., Jamestown, N. Y.

Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 207.)

Essex Brass Foundry Co., Sixth & Harvard Sts., Cambridge, Mass.

Eureka Co., North East, Pa.

Farles Mfg. Co., 624 N. Union St., Decatur, Ill.

Federal Signal Co., Albany, N. Y.

Fischer-Sweeney Bronze Co., 13th & Grand Sts., Huboken, N. J.

Fitz Water Wheel Co., Penn. St. & Penna. R. R., Hanover, Pa.

Foster Brass Foundries, 315 Vernal St., Cedar Rapids, Ia.

Frontier Brass Foundry, 318 Elmwood Ave., Niagara Falls, N. Y.

G. & R. Foundry & Machine Co., 6½ St. & Penn. R. R., Terre Haute, Ind.

Gallagher's Sons, James, 87 Centre St., New York, N. Y.

General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 581.)

General Bronze Foundry Co., 5810 Superior Ave., Cleveland O. "Werne," "Tenite."

General Castings Co., Ford Bldg., Detroit, Mich.

General Railway Signal Co., Rochester, N. Y.

Gerson-Carey Co., Kalamazoo St. & L. S. Ry., Lansing, Mich.

Gilbert & Sons Brass Foundry Co., A., 4019 Forest Park Blvd., St. Louis, Mo. (See page 215.)

Globe Brass Works, 1213 W. Liberty St., Cincinnati, O. "Timco."

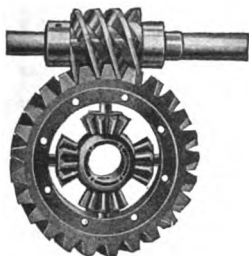
Graham & Co., James, 293 Wooster St., New Haven, Conn.

Green Engineering Co., Main St. & Burns Ave., Dayton, O. "Aluminite."

Griswold Mfg. Co., 1055 W. 12th St., Erie, Pa.

Hampden Brass Co., Springfield, Mass.

Everything is listed under the NOUN or principal word



Cramp's Super-Strength Gear Bronze

**A Better Gear Bronze
at No Increase in Price**

Never before, we believe, has there been perfected a single type of metal so clearly entitled to receive the unbounded confidence of automotive engineers. This is due to its tensile strength and wearing qualities, enabling it to better withstand the gruelling test of heavy load combined with unexpected thrusts and sudden shocks.

Government Tests on Forgings of This Metal Show

Tensile Strength 122,000 Lbs. Per Sq. In.
Elastic Limit Under Tension 89,000 Lbs. Per Sq. In.
Elastic Limit Under Compression . . . 58,000 Lbs. Per Sq. In.
Permanent Set at 100,000 Lbs. on 1 In. Cube 014 In.

Brinell Tests on Gear Blanks of This Metal Have Shown:

On Castings, a Brinell Hardness of No. 250

On Forgings, a Brinell Hardness of No. 275

This bronze is the result of 90 years' experience in building machinery of all kinds. We can supply it in the form of forged or cast blanks or gear wheels machined and hobbled complete, including the furnishing of the steel worms—ready for installation.

We would like to hear from automobile and axle makers who are looking for better bronze at no increase in price.

**Wm. Cramp & Sons
Ship and Engine
Building Co.**

PHILADELPHIA, - PA.



Please mention The Automobile Trade Directory

CASTINGS, Aluminum (Continued)

- Hansen & Olson Co., 506 S. Green St., Chicago, Ill. (See page 201.)
- Harley Co., 1921 Page Blvd., Springfield, Mass.
- Harsch Bronze & Foundry Co., John, 11613 Madison Ave., Cleveland, O.
- Herculite—See Levett Co.
- Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.
- Higrade—See Buffalo Non-Ferrous Casting & Mfg. Co.
- Hoboken Brass Co., Seventh & Madison Sts., Hoboken, N. J.
- Hoffman Bronze & Aluminum Casting Co., 998 Addison Rd., Cleveland, O.
- Holtum Mfg. Co., Freeport, Ill. (See page 903.)
- Hots Foundry & Mfg. Co., Wolf Ave., Fremont, O.
- Howard Metal Co., Second & Canal Sts., Reading, Pa.
- Ideal Bronze Co., 1265-69 E. 55th St., Cleveland, O. (See page 201.)
- Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.
- Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
- Indianapolis Brass Co., 1012 E. Michigan St., Indianapolis, Ind.
- J. W. R.—See Richardson Foundry & Metals Corp.
- Jefferson Brass Foundry, 209-11 King St., Brooklyn, N. Y.
- Jonah & George, Little's Ct., Merrimac, Mass.
- Johnson Bronze Co., New Castle, Pa. (See page 174.)
- Joppa Machine & Bronze Co., 1537 N. Fawn St., Philadelphia, Pa.
- K & M Brass & Aluminum Castings Co., 10611-18 Quincy Ave., Cleveland, O.
- Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
- Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.
- Kinsey & Mahler Co., 400 S. Adams St., Peoria, Ill.
- Kokomo Brass Works, 1415 Webster St., Kokomo, Ind.
- Lalor Fuel Oil System Co., 527-33 Colvin St., Baltimore, Md.
- Levering Bros., 200 Key Highway, Baltimore, Md.
- Levett—See Levett Co.
- Levett Co., Walker M., 417-21 E. 23d St., New York, N. Y. "Magnalite," "Levettal," "Herculite."
- Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa.
- Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.
- Lusk Brass Foundry, J. H., 325 Liberty St., Jackson, Mich.
- Lynite—See Aluminum Manufacturers, Inc.
- McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
- Machinists Foundry Co., 1617 Macedonia Ave., Muncie, Ind.
- Magnalite—See Levett Co.
- Maluminum Castings Co., 1116-30 E. Georgia St., Indianapolis, Ind.
- Martin & Anson, 2236-38 Indiana Ave., Chicago, Ill.
- Michaels Bronze Co., 230-40 Scott St., Covington, Ky.
- Mills Brass Co., Wm. A., Port Chester, N. Y.
- Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.
- Moline Iron Works, 228 Second St., Moline, Ill.
- Monumental Bronze Co., 254 Howard St., Bridgeport, Conn.
- Mueller Metals Co., Lapier Ave., Port Huron, Mich.
- Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.
- Muskegon Aluminum Foundry Co., Clay & Ninth Sts., Muskegon, Mich.
- Nabralco—See National Bronze & Aluminum Foundry Co.
- National Aluminum Co., 1905 Frederick St., Racine, Wis.
- National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
- National Bronze Corp., 4537 Pope Ave., St. Louis, Mo.
- National Bronze & Aluminum Castings Co., 3530-50 Garfield Ave., Detroit, Mich.
- National Bronze & Aluminum Foundry Co., 2539 E. 79th St., Cleveland, O. "Nabralco."
- Neptune Meter Co., 50 E. 42d St., New York, N. Y.
- Niagara Brass Mfg. Co., Lockport, N. Y.
- Non-Ferrous Alloys Co., 3162 W. Fort St., Detroit, Mich.
- North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
- Oberdorfer Brass Co., M. L., 304 E. Water St., Syracuse, N. Y.
- Ohio Pattern Works & Foundry Co., Cincinnati, O.
- Pattern & Castings Co., 217 N. Water St., Saginaw, Mich.
- Paulson & Son, Thomas, 97 Second Ave., Brooklyn, N. Y.
- Pioneer Brass Works, 418-24 S. Penn St., Indianapolis, Ind.
- Pittsburgh Brass Mfg. Co., 32d St. & Penn Ave., Pittsburgh, Pa.
- Pottstown Brass Works, York & Walnut Sts., Pottstown, Pa.
- Premier Metal Etching Co., 14th St. & Van Alst Ave., Long Island City, N. Y.
- Pro. Eccl. Foundries, Lake & Crown Sts., Bloomfield, N. J.
- Providence Brass & Aluminum Foundry, 460 Eddy St., Providence, R. I.
- Racine Aluminum & Brass Foundry Co., 1339 12th St., Racine, Wis.
- Reeves & Co., Paul S., 1415-25 Catharine St., Philadelphia, Pa.
- Regal Brass Foundry Co., 72 E. Larned St., Detroit, Mich.
- Richardson Foundry & Metals Corp., J. W., 1066 62nd St., Brooklyn, N. Y. "J. W. R."
- Rider-Bagg Co., 369 Birnie Ave., Springfield, Mass.
- Rincon Foundry Co., 349-65 Seventh St., San Francisco, Cal.
- Ring True—See General Aluminum & Brass Mfg. Co.
- Ross Machine Co. (Wollaston), Quincy, Mass.
- Rostand Mfg. Co., Milford, Conn.
- Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.
- "S-C" Regulator Co., Perry & High Sts., Fostoria, O.
- Sayre Stamping Co., Lockhart Bldg., Sayre, Pa.
- Service Pattern Mfg. Co., 1469 E. Grand Blvd., Detroit, Mich.
- Sharp Brass Works, J. C., Boyce & 20th Sts., Chattanooga, Tenn.
- Sherwood Brass Works, 6331 E. Jefferson Ave., Detroit, Mich.
- Smith Hardware Co., Frank F., 85 Clay St., Newark, N. J.
- Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
- Spindler & Deringer, Colgate & Mercer Sts., Jersey City, N. J.

Everything is listed under the NOUN or principal word

Hansen & Olson Co.

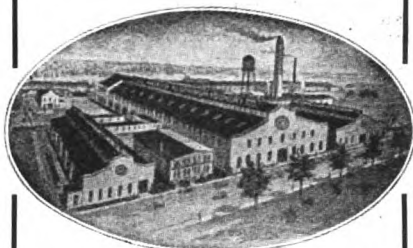
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VITA-LITE

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PRODUCTION WORK — ANY SIZE OR WEIGHT
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CASTINGS, Aluminum (Continued)

Standard Brass & Iron Works, 1820 St. Paul Ave., Milwaukee, Wis.
 Standard Brass Foundry Co., 990 E. 67th St., Cleveland, O.
 Standard Foundry Co., Hartford, Conn.
 Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
 Stanley Foundry Co., North St. & Davis Ave., N. W., Grand Rapids, Mich.
 Sterling Sales Co., Auburn, Ind.
 Stiles Mfg. Co., St. Louis, Mo.
 (See page 471.)
 Sunderman Corp., Newburgh, N. Y.
 (See page 191.)
 Superior Brass Works, 250 Brush St., Detroit, Mich.
 Superior Brass Mfg. Co., 90-98 Wayne St., Mansfield, O.
 Superior Bronze Corp., 19th & Poplar Sts., Erie, Pa.
 T. B. C.—See Titanium Bronze Co.
 Tenite—See General Bronze Foundry Co.
 Timco—See Globe Brass Works.
 Titanium Bronze Co., Sugar & Lafayette Sts., Niagara Falls, N. Y. "T. B. C."
 Tolonite—See Beacon Bronze Co.
 Unique Brass Foundry Co., 833-41 Grant St., Buffalo, N. Y.
 United Brass & Aluminum Mfg. Co., Goulden St., Port Huron, Mich.
 United Bronze Co. of Pittsburgh, Pittsburgh, Pa.
 Verillite Metals Co., 438 E. Girard Ave., Philadelphia, Pa.
 Victoria Metal Co., 882-36 E. Eighth St., Erie, Pa.
 W. B.—See Anderson Foundry Co.
 Walsh, James F., 33 N. Clinton St., Chicago, Ill.
 Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
 Waukesha Foundry Co., Lincoln Ave., Waukesha, Wis.
 Weber-Knapp Co., Jamestown, N. Y.
 Wellman Bronze Co., Cleveland, O.
 (See page 215.)
 Werne—General Bronze Foundry Co.
 Werra Aluminum Foundry Co., Waukesha, Wis. (See page 201.)
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 471.)
 Williams, Franklin, 251 Jefferson St., Newark, N. J. (See page 75.)
 Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J.
 Wisconsin Aluminum Foundry Co., 16th & Franklin Sts., Manitowoc, Wis.
 Wolkow & Sons, F., 150 W. Market St., Louisville, Ky.
 York Hardware & Brass Works, 501-50 E. Market St., York, Pa.
 Zelgler Mfg. Co., 216 S. Central Ave., Alexandria, Ind.

CASTINGS, BRASS—See Castings, Bronze and Brass

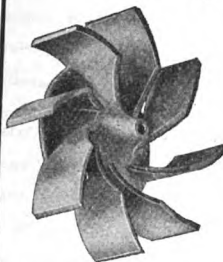
CASTINGS, Bronze and Brass

Acme Brass Works, 8211 Collins Ave., Detroit, Mich.
 Acme Works, Ohio & Delaware Sts., Indianapolis, Ind.
 Active Castings Co., 1008 Maple St., Detroit, Mich.

Adamant—See Cincinnati Aluminum Casting Co.
 Adams & Westlake Co., Chicago, Ill.
 "Adlake." (See page 507.)
 Adlake—See Adams & Westlake Co.
 Adrian Brass & Aluminum Casting Co., Adrian, Mich.
 Advance Brass Mfg. Co., E. Western Ave., Muskegon, Mich.
 Aetna Brass & Bronze Co., 1831-35 E. 55th St., Cleveland, O.
 Albrass Co., Coxsackie, N. Y.
 Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O. "Lynux."
 American Brass Products Co., Pottstown, Pa.
 American Brass & Iron Co., Detroit, Mich. (See page 203.)
 American Bronze Corp., Berwyn, Pa.
 (See page opposite Inside Front Cover.)
 American Foundry Co., 634 S. 11th St., Newark, N. J.
 American Manganese Bronze Co. (Helmshurst), Philadelphia, Pa.
 American Non-Ferrous Metals Corp., Chester, Pa.
 American Safety Lamp & Mine Supply Co., 1321 Capouse Ave., Scranton, Pa.
 Amesbury Brass & Foundry Co., Amesbury, Mass.
 Anderson Foundry Co., Wm. B., 24-28 S. Clinton St., Chicago, Ill. "W. B."
 Ansonia Mfg. Co., Ansonia, Conn.
 Arbuckle & Co., Rushville, Ind.
 Artistic Bronze Co., 2050 Fairfield Ave., Bridgeport, Conn.
 Ashland Brass Foundry, Virginia Ave., Ashland, O.
 Atlas Brass Foundry Co., Columbus, O.
 (See page 551.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
 Basselek Co., Bridgeport, Conn.
 (See page 311.)
 Bay City Foundry & Machine Co., 1610 Water St., Bay City, Mich.
 (See page 955.)
 Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.
 Bayer Foundries Co., 4067 Park Ave., St. Louis, Mo.
 Beacon Bronze Co., Beacon, N. Y. "Boronite." (See page 486.)
 Bergen Point Brass Foundry, 161 Hobart Ave., Bayonne, N. J.
 Blake, Edwin J., 565 Windsor St., Hartford, Conn.
 Bohn Foundry Co., Chas. B., 3651 Hart Ave., Detroit, Mich.
 Boronite—See Beacon Bronze Co.
 Brass Foundry Co., 711-17 S. Adams St., Peoria, Ill.
 Bridgeport Deoxidized Bronze & Metal Co., 459 Iranistan Ave., Bridgeport, Conn.
 Brown Bros., 46-48 Garden St., Stamford, Conn.
 Buckeye Brass & Mfg. Co., 6410 Hawthorne Ave., Cleveland, Ohio.
 Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.
 Buermann Mfg. Co., August, 220 Jelliff Ave., Newark, N. J. "Star."
 Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y. (See page 205.)
 Buffalo Non-Ferrous Casting & Mfg. Co., 41 Letchworth St., Buffalo, N. Y. "Higrade."
 Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 175.)
 O & C Sales Corp., 1755 Broadway, New York, N. Y. (Distributors.)
 (See page 203.)
 Cantrell Hardware & Tool Co., Reading, Pa.

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CASTINGS, Bronze and Brass (Continued)

- Capitol Brass Works, 2306 Franklin St., Detroit, Mich.
- Carter, M. T., Plainville, Conn.
- Caskey's Brass & Bronze Works, Richmond & York Sts., Philadelphia, Pa.
- Central Brass Foundry, 1229 W. Randolph St., Chicago, Ill.
- Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
- Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
- Champion Brass Works, Coldwater, Mich. (See page 214.)
- Chapman Co., Berlin, Wis.
- Chicago Hardware Foundry Co., 2500 Great Lakes Ave., North Chicago, Ill.
- City Brass Foundry, 21 Slater Ave., Pawtucket, R. I.
- City Brass Foundry Co., 5318 St. Clair Ave., N. E., Cleveland, O.
- Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 471.)
- Cleveland Aluminum Casting Co., 901 Addison Rd., Cleveland, O.
- Cochrane Brass Foundry, S. Richard Ave. & N. Central Tracks, York, Pa.
- Cochrane Brass & Mfg. Co., J. A., 1408 E. 40th St., Cleveland, O.
- Columbia Castings Co., 111 Ferdinand Ave., Detroit, Mich.
- Columbian Bronze Corp., 523 Fifth Ave., New York, N. Y.
- Columbus Brass Co., 540 Dublin Ave., Columbus, O.
- Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.
- Connecticut Brass Foundry Co., 660 E. Main St., Waterbury, Conn.
- Cope-Swift Co., McDougall Ave. & Wight St., Detroit, Mich. (See page 307.)
- Cramp & Sons Ship & Engine Building Co., Wm., Philadelphia, Pa. (See page 199.)
- Crescent Brass Mfg. Co., 301 S. Seventh St., Reading, Pa.
- Daybro—See Dayton Bronze Bearing Co.
- Dayton Bronze Bearing Co., 908-18 E. Third St., Dayton, O. "Daybro."
- D'Este Co., Julian, 26 Canal St., Boston, Mass.
- Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
- Detroit Motor Castings Co., 299-308 Beaufait Ave., Detroit, Mich.
- Diamond Brass Foundry & Machine Co., 1115 Washington Blvd., Chicago, Ill.
- Dorchester Brass & Aluminum Foundry, Old Sturtevant Bldg. (Jamaica Plain), Boston, Mass.
- Douglas & Lomason Co., 5336 Lincoln Ave., Detroit, Mich.
- Eagle—See Stillman White Foundry Co.
- Efemco—See Foster, Merriam & Co.
- Electric Materials Co., North East, Pa.
- Elephant—See Phosphor Bronze Smelting Co.
- Ellison Brass Mfg. Co., Jamestown, N. Y.
- Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
- Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 207.)
- Essex Brass Foundry Co., Sixth & Harvard Sts., Cambridge, Mass.
- Eureka Brass Co., 601 Red Bud Ave., St. Louis, Mo.
- Eureka Co., North East, Pa.
- Exeter Brass Works, 10 R. R. Ave., Exeter, N. H.
- Faries Mfg. Co., 624 N. Union St., Decatur, Ill.
- Federal Bearing & Bushing Corp., Detroit, Mich. (See page 173.)
- Federal Signal Co., Albany, N. Y.
- Fischer-Sweeny Bronze Co., 13th & Grand Sts., Hoboken, N. J.
- Fitz Water Wheel Co., Penn St. & Penna. R. R., Hanover, Pa.
- Flannery Co., P. J., 33 Whiting St., New Britain, Conn.
- Flour City Ornamental Iron Co., Minneapolis, Minn.
- Fore River Shipbuilding Corp., Quincy, Mass.
- Foster Brass Foundries, 815 Vernal St., Cedar Rapids, Ia.
- Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)
- Frontier Brass Foundry, 818 Elmwood Ave., Niagara Falls, N. Y.
- G. & R. Foundry & Machine Co., 6½ St. & Penn. R. R., Terre Haute, Ind.
- Gallagher's Sons, James, 87 Centre St., New York, N. Y.
- General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True." (See page 581.)
- General Bronze Foundry Co., 5810 Superior Ave., Cleveland, O. "Werne." "Tenax."
- General Castings Co., Ford Bldg., Detroit, Mich.
- General Railway Signal Co., Rochester, N. Y.
- Gerson-Carey Co., Kalamazoo St. & L. S. Ry., Lansing, Mich.
- Gilbert & Sons Brass Foundry Co., A., 4019 Forest Park Blvd., St. Louis, Mo. (See page 215.)
- Globe Brass Works, 1213 W. Liberty St., Cincinnati, O. "Timco."
- Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich.
- Hampden Brass Co., Springfield, Mass.
- Hansen & Olson Co., 508 S. Green St., Chicago, Ill. (See page 201.)
- Hardy & Sons Co., Wm. A., Fitchburg, Mass.
- Harley Co., 1921 Page Blvd., Springfield, Mass.
- Harper, Thomas, 204 Lafayette St., New York, N. Y.
- Harsch Bronze & Foundry Co., John, 11613 Madison Ave., Cleveland, O.
- Hart Co., Williamsport, Pa.
- Henry-Bonnard Bronze Co., Washington St., Mt. Vernon, N. Y.
- Herculite—See Levett Co.
- Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.
- Higrade—See Buffalo Non-Ferrous Casting & Mfg. Co.
- Hoboken Brass Co., Seventh & Madison Sts., Hoboken, N. J.
- Hoffman Bronze & Aluminum Casting Co., 998 Addison Rd., Cleveland, O.
- Holtum Mfg. Co., Freeport, Ill. (See page 903.)
- Homer Brass Works, 231 Race St., Philadelphia, Pa.
- Hots Foundry & Mfg. Co., Wolf Ave., Fremont, O.
- Howard Metal Co., Second & Canal Sts., Reading, Pa.
- I. N. Co.—See Monel Metal Products Corp.
- Ideal Bronze Co., 1365-69 E. 55th St., Cleveland, O. (See page 201.)
- Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.
- Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
- Indianapolis Brass Co., 1012 E. Michigan St., Indianapolis, Ind.
- Ives Co., H. B., 5-17 Artisan St., New Haven, Conn.

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Buffalo Bronze Die Cast Corporation

Die Casters—Brass Founders

100 Arthur Street

TRADE

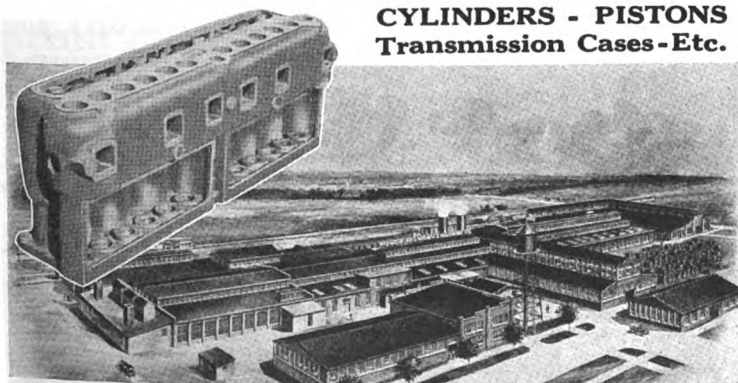


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Modern Equipment to Make the Most Intricate Parts.
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MUNCIE

INDIANA

Please mention The Automobile Trade Directory

CASTINGS, Bronze and Brass (Continued)

- J. W. R.—See Richardson Foundry & Metals Corp.
- Jefferson Brass Foundry, 209-11 King St., Brooklyn, N. Y.
- Johnson Bronze Co., New Castle, Pa. (See page 174.)
- Jonah & George, Little's Ct., Merrimac, Mass.
- Joppa Machine & Bronze Co., 1527 N. Fawn St., Philadelphia, Pa.
- K & M Brass & Aluminum Castings Co., 10611-13 Quincy Ave., Cleveland, O.
- Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
- Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.
- Kinsey & Mahler Co., 400 S. Adams St., Peoria, Ill.
- Kokomo Brass Works, 1415 Webster St., Kokomo, Ind.
- Lakewood Screw Machine Products Co., Cleveland, O.
- Lalor Fuel Oil System Co., 527-33 Colvin St., Baltimore, Md.
- Langenkamp-Wheeler Brass Works, 1206-28 Shelby St., Indianapolis, Ind.
- Lebanon Brass Mfg. Co., Lebanon, Pa.
- Leitelt Bros., 7735 S. Chicago Ave., Chicago, Ill.
- Levering Bros., 300 Key Highway, Baltimore, Md.
- Levett Co., Walker M., 417-21 E. 23d St., New York, N. Y. "Magnalite," "Leavettal," "Herculite."
- Levettal—See Levett Co.
- Light Mfg. & Fdry. Co., Union & Queen Sts., Pottstown, Pa.
- Limerick Co., J. Arthur, 860 N. Howard St., Baltimore, Md.
- Lumen Bearing Co., Buffalo, N. Y. (See page 589.)
- Lusk Brass Foundry, J. H., 325 Liberty St., Jackson, Mich.
- Lynux—See Aluminum Manufacturers, Inc.
- McGill Metal Co., Valparaiso, Ind.
- McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
- Machinists Foundry Co., 1617 Macedonia Ave., Muncie, Ind.
- Magnalite—See Levett Co.
- Maluminum Castings Co., 1116-30 E. Georgia St., Indianapolis, Ind.
- Martin & Anson, 2226-28 Indiana Ave., Chicago, Ill.
- Maxwell Engineering Co., Rome, N. Y.
- Mead & Cross Co., 309 Lafayette St., New York, N. Y.
- Michael's Bronze Co., 230-40 Scott St., Covington, Ky.
- Mills Brass Co., Wm. A., Port Chester, N. Y.
- Milwaukee Valve Co., 189 Burrell St., Milwaukee, Wis.
- Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.
- Moline Iron Works, 228 Second St., Moline, Ill.
- Monel Metal Products Corp., Oak St., Bayonne, N. J. "I. N. Co."
- Monumental Bronze Co., 354 Howard St., Bridgeport, Conn.
- More-Jones Brass & Metal Co., 3132-44 N. Broadway, St. Louis, Mo.
- Mt. Vernon Metal Products Co., Third Ave. & Seventh St., Mt. Vernon, N. Y.
- Mt. Vernon Co., Mt. Vernon, N. Y.
- Mueller Metal Co., 233 Dyer St., Providence, R. I.
- Mueller Metals Co., Lapier Ave., Port Huron, Mich.
- Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.
- Muskegon Aluminum Foundry Co., Clay & Ninth Sts., Muskegon, Mich.
- Nabralco—See National Bronze & Aluminum Foundry Co.
- National Aluminum Co., 1905 Frederick St., Racine, Wis.
- National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
- National Bronze Corp., 4537 Pope Ave., St. Louis, Mo.
- National Bronze & Aluminum Castings Co., 3530-60 Garfield Ave., Detroit, Mich.
- National Bronze & Aluminum Foundry Co., 2539 E. 79th St., Cleveland, O. "Nabralco."
- Neptune Meter Co., 50 E. 42d St., New York, N. Y.
- New York Brass Foundry Co., 102-04 Centre St., New York, N. Y.
- Niagara Brass Mfg. Co., Lockport, N. Y.
- Nolte Brass Co., 27-29 W. Jefferson St., Springfield, O.
- Non-Ferrous Alloys Co., 3162 W. Fort St., Detroit, Mich.
- North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
- Northwestern Brass & Bronze Foundry, 444 67 Humboldt Ave., Detroit, Mich.
- Oberdorfer Brass Co., M. L., 304 E. Water St., Syracuse, N. Y.
- Ohio Pattern Works & Foundry Co., Cincinnati, O.
- Onondaga Brass Co., Decker & Brown St., Syracuse, N. Y.
- Owosso Bronze Bearing Co., Owosso, Mich.
- Paulson & Son, Thomas, 97 Second Av., Brooklyn, N. Y.
- Pattern & Castings Co., 217 N. Water St., Saginaw, Mich.
- Phosphor Bronze Smelting Co., 22 Washington Ave., Philadelphia, Pa. "Elephant." (See page 583.)
- Pioneer Brass Works, 418-24 S. Penn St., Indianapolis, Ind.
- Pittsburgh Brass Mfg. Co., 32d St. & Pe Ave., Pittsburgh, Pa.
- Pottstown Brass Works, York & Walnut St., Pottstown, Pa.
- Precision Castings Co., Syracuse, N. Y. (See page 203.)
- Premier Metal Etching Co., 14th St. & V Aist Ave., Long Island City, N. Y.
- Pro. Econ. Foundries, Lake & Crown St., Bloomfield, N. J.
- Progressive Brass Foundry, Keowee & Herbert Sts., Dayton, O.
- Providence Brass & Aluminum Foundry, Eddy St., Providence, R. I.
- Racine Aluminum & Brass Foundry Co., 1 13th St., Racine, Wis.
- Railway & Industrial Engineering Co., People Bank Bldg., Pittsburgh, Pa.
- Reeves & Co., Paul S., 1415-25 Catharine Philadelphia, Pa.
- Regal Brass Foundry Co., 72 E. Larned Detroit, Mich.
- Richardson Foundry & Metals Corp., J. 1066 62nd St., Brooklyn, N. Y. "J. W. Rider-Bagg Co., 369 Birnie Ave., Springfield, Mass."
- Rincon Foundry Co., 349-65 Seventh St., Francisco, Cal.
- Ring True—See General Aluminum & Brass Mfg. Co.
- Rome Locomotive & Machine Works, Rome, N. Y.
- Ross Machine Co. (Wollaston), Quincy, Mass.
- Restand Mfg. Co., Milford, Conn.

Everything is listed under the NOUN or principal word

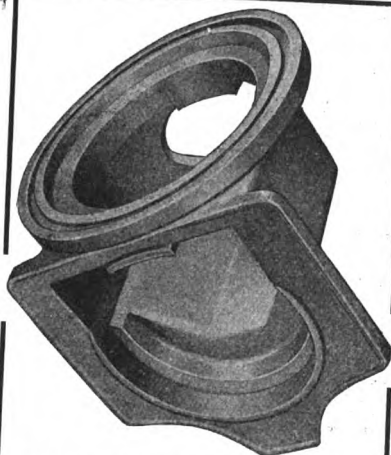
Chicago Malleable Castings Company

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**CERTIFIED QUALITY
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NATIONAL LEAD COMPANY

111 Broadway, N. Y.

Please mention The Automobile Trade Directory

CASTINGS, Bronze and Brass (Continued)

Royal Machine & Foundry Co., 332-90 Division St., Oshkosh, Wis.
 "S-C" Regulator Co., Perry & High Sts., Fostoria, O.
 Sani Products Co., 209 W. Randolph St., Chicago, Ill.
 Sayre Stamping Co., Lockhart Bldg., Sayre, Pa.
 Service Pattern Mfg. Co., 1469 E. Grand Blvd., Detroit, Mich.
 Shamow Shuttle Co., 601 N. Main St., Woonsocket, R. I.
 Sharp Brass Works, J. C., Boyce & 20th Sts., Chattanooga, Tenn.
 Sherwood Brass Works, 6331 E. Jefferson Ave., Detroit, Mich.
 Smith Hardware Co., Frank F., 35 Clay St., Newark, N. J.
 Smith Mfg. Co., A. P., Norman & Lawrence Sts., East Orange, N. J.
 Spencer's Sons, I. S., Fair St., Guilford, Conn.
 Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
 Spindler & Deringer, Colgate & Mercer Sts., Jersey City, N. J.
 Staats & Co., Geo., 76 Bayard St., Brooklyn, N. Y.
 Standard Brass & Iron Works, 1320 St. Paul Ave., Milwaukee, Wis.
 Standard Brass Foundry Co., 990 E. 67th St., Cleveland, O.
 Standard Foundry Co., Hartford, Conn.
 Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
 Stanley Foundry Co., North St. & Davis Ave., N. W., Grand Rapids, Mich.
 Star—See Buermann Mfg. Co.
 Sterling Sales Co., Auburn, Ind.
 Sterling Specialty Co., New Comerstown, O.
 Stiles Mfg. Co., St. Louis, Mo.
 (See page 471.)
 Stillman White Foundry Co., 1 Bark St., Providence, R. I. "Eagle."
 Stowell Co., South Milwaukee, Wis.
 Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
 Sunderland Corp., Newburgh, N. Y.
 (See page 191.)
 Super-Refined Metals Co., 2631 Woodward Ave., Detroit, Mich. (See page 589.)
 Superior Brass Works, 250 Brush St., Detroit, Mich.
 Superior Brass Mfg. Co., 90-99 Wayne St., Mansfield, O.
 Superior Bronze Corp., 19th & Poplar Sts., Erie, Pa.
 Superior Engineering Works, Small Bldg., York, Pa.
 T. B. C.—See Titanium Bronze Co.
 Tenax—See General Bronze Foundry Co.
 Thery & Kendrick Mfg. Co., 2724 Franklin St., Detroit, Mich. (See page 178.)
 Thomson Press Co., John, 253 Broadway, New York, N. Y.
 Timco—See Globe Brass Works.
 Titanium Bronze Co., Sugar & Lafayette Sts., Niagara Falls, N. Y. "T. B. C."
 Truck Parts & Foundry Co., Alma, Mich.
 Turner & Seymour Mfg. Co., Lawton St. & R. R., Torrington, Conn.
 Twin City Forge & Foundry Co., Stillwater, Minn.
 Union Metal Works, Chelsea, Mass.
 Unique Brass Foundry Co., 333-41 Grant St., Buffalo, N. Y.
 United Brass & Aluminum Mfg. Co., Goulden St., Port Huron, Mich.

United Bronze Co. of Pittsburgh, Pittsburgh, Pa.
 Vanadium Metals Co., Vanadium Bldg., Pittsburgh, Pa. "Victor."
 Verilite Metals Co., 423 E. Girard Ave., Philadelphia, Pa.
 Victor—See Vanadium Metals Co.
 Victoria Metal Co., 333-36 E. Eighth St., Erie, Pa.
 W. B.—See Anderson Foundry Co.
 Walsh, James F., 32 N. Clinton St., Chicago, Ill.
 Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Waukesha Foundry Co., Lincoln Ave., Waukesha, Wis.
 Weber-Knapp Co., Jamestown, N. Y.
 Welbronco—See Wellman Bronze Co.
 Wellman Bronze Co., Cleveland, O. "Welbronco." (See page 215.)
 Wells Chemical Bronze Works, Temple & Harding Sts., Worcester, Mass.
 Werne—See General Bronze Foundry Co.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 471.)
 Western Pump Co., 423 Third St., Davenport, Ia.
 White Mfg. Co., Ninth St. & E. Lincoln Ave., Goshen, Ind.
 Williams, Franklin, 251 Jefferson St., Newark, N. J. (See page 75.)
 Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.
 Williams & Son, E. A., 105-11 Plymouth St., Jersey City, N. J.
 Wolkow & Sons, F., 150 W. Market St., Louisville, Ky.
 Woodruff & Sons Co., Walter W. Mount Carmel, Conn.
 York Hardware & Brass Works, 501-50 E. Market St., York, Pa.
 Zeigler Mfg. Co., 216 S. Central Ave., Alexandria, Ind.

CASTINGS, COMPOSITION—See Castings, Bronze and Brass**CASTINGS, Die**

Acme Die-Casting Corp., Third Ave. & 35th St., Brooklyn, N. Y.
 Alemite Die Casting & Mfg. Co., 241-51 W. Chicago Ave., Chicago, Ill.
 American Bearing & Die Casting Corp., Indianapolis, Ind.
 Badger Die Casting Co., 159 Buffalo St., Milwaukee, Wis.
 Barnhart Bros. & Spindler, 33 Throop St., Chicago, Ill. "Tenso."
 Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.
 Bronze Die Casting Co., 929 Union Arcade, Pittsburgh, Pa.
 Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y. (See page 205.)
 Burns-Croft Co., 2239 Herndon St., Chicago, Ill.
 Die Casting Co. of New Jersey, 48 Sharon St., Irvington, N. J.
 Do-Di—See Doehler Die-Casting Co.
 Do-Lite—See Doehler Die-Casting Co.
 Doehler Die-Casting Co., Brooklyn, N. Y. "Do-Di," "Do-Lite." (See page 211.)
 Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 207.)

Everything is listed under the NOUN or principal word

FRANKLIN DIE-CASTINGS



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STEP into a car today—press a button—off you go! No cranking, no fuss. The development of automobile accessories has been largely responsible for making the ownership of a motor car more and more trouble-free.

In their search for speedy and economical production methods, automobile accessory manufacturers soon avail themselves extensively of the die-casting process. Franklin Die-Cast parts are used in magnetos, truck governors, engine-driven tire pumps, lighting systems, electric drills and valve grinders, measuring pumps for gasoline and other accessories.

In 1892 we originated the Die-Casting Process. For nearly thirty years we have been reducing the cost and simplifying the output in many fields of industry. The addition of a special process for the production of finished brass castings now enables us to offer parts in brass, bronze, aluminum, tin, lead and zinc base alloys as conditions require, thus meeting a still wider range of work.

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Write for booklet, "Franklin Die-Castings in Many Fields"

FRANKLIN DIE-CASTING CORPORATION
Gifford and Magnolia Sts.
SYRACUSE, N. Y.

Please mention The Automobile Trade Directory

CASTINGS, Die (Continued)

Franklin Die-Casting Corp., Gifford & Magnolia Sts., Syracuse, N. Y.
(See page 209.)

Frits, Perry E., 2329 Sunrise St., Los Angeles, Cal.

General Aluminum & Brass Mfg. Co., Detroit, Mich. "Ring True."
(See page 581.)

Gray Mfg. Co., C. M., 353 Central Ave., East Orange, N. J.

Harley Co., 1921 Page Blvd., Springfield, Mass.

Hoyt Metal Co., St. Louis, Mo.
(See page 102.)

Indianapolis Brass Co., 1012 E. Michigan St., Indianapolis, Ind.

Keystone Die Casting Co., 309 E. Main St., Norristown, Pa.

Kidder-Oswald Co., Dayton, O.

Kinite Co., 1333-40 St. Paul Ave., Milwaukee, Wis.

Legler-Ellerman Co., E. Bacon St., Dayton, O.

Levering Bros., 200 Key Highway, Baltimore, Md.

Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa.

Marf Machine Co., 17-27 Vandewater St., New York, N. Y.

Mead & Cross Co., 309 Lafayette St., New York, N. Y.

Metalware Corp., 225 W. Superior St., Chicago, Ill. (See page 859.)

Michigan Smelting & Refining Co., 7835 Jos. Campau Ave., Detroit, Mich.

Milwaukee Die Casting Co., 297 Fourth St., Milwaukee, Wis. (See page 173.)

Mogul Metal Co., Detroit, Mich.
(See page 101.)

Mt. Vernon Metal Products Co., Third Ave & Seventh St., Mt. Vernon, N. Y.

Mueller Metals Co., Lapier Ave., Port Huron, Mich.

Mussy-Lyon Co., Detroit, Mich.
(See page 101.)

National Lead Co., 111 Broadway, New York, N. Y. (See page 207.)

Parker White Metal & Machine Co., Erie, Pa. (See page 203.)

Phoenix Die Casting Co., 21 Illinois St., Buffalo, N. Y.

Precision Castings Co., Syracuse, N. Y.
(See page 203.)

Recording Devices Co., 534 W. Fifth St., Dayton, O.

Ring True—See General Aluminum & Brass Mfg. Co.

Seal Co., H. C., 1800 Montrose Ave., Chicago, Ill.

Sanford Co., David C., 22-29 Drouve St., Bridgeport, Conn.

Sargent & Co., Water & Wallace Sts., New Haven, Conn.

Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.

Standard Die Casting Co., 600 S. Pierce St., Milwaukee, Wis.

Stewart Mfg. Corp., 4500 Fullerton Ave., Chicago, Ill.

Stroh Die Moulded Casting Co., 161-71 Michigan St., Milwaukee, Wis.

Tenso—See Barnhart Bros. & Spindler.

United Bronze Co. of Pittsburgh, Pittsburgh, Pa.

Universal Bearings Co., 345 Broadway, Lorain, O.

Veeder Mfg. Co., 22 Sargeant St., Hartford, Conn. (See page 585.)

Victor Bearings Co., Indianapolis, Ind.
(See page 99.)

Victor Die Casting Machine Co., River St., Ypsilanti, Mich.

Victoria Metal Co., 322-36 E. Eighth St., Erie, Pa.

Vulcan Die Casting Corp., 1126-36 W. Belden Ave., Syracuse, N. Y.

White Brass Casting Co., 1649 W. Grand Ave., Chicago, Ill.

Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.

CASTINGS, Grey Iron

Acme-Palmers & Dernooy Foundry Co., 5217 Sweeney Ave., Cleveland, O.

Adamite—See Pittsburgh Iron & Steel Foundries Co.

Advance Foundry Co., Dayton, O.

Albert Lea Foundry Co., Albert Lea, Minn.

Allyne-Ryan Foundry Co., Aetna Rd. & E. 91st St., Cleveland, O.

Almont Mfg. Co., Almont, Mich.

American Car & Foundry Co., 5718 Russell St., Detroit, Mich.

American Foundry & Mfg. Co., 11th & Herbert Sts., St. Louis, Mo.

American Tool & Machine Co., 16 High St., Boston, Mass.

American Tube Co., 3704 S. Rockwell St., Chicago, Ill.

Arbuckle & Co., Rushville, Ind.

Arnold Co., Hoyt St., Norwalk, Conn.

Atlantic Foundry Co., 132 Beaver St., Akron, O.

Atlas Foundry Co., 131 S. Artillery Ave., Detroit, Mich.

Atlas Foundry Co., Lyons Ave. & Coit St., Irvington, N. J.

Automotive Foundry Co., Rose & Gillette Sts., La Crosse, Wis.

Barker, James, Sixth & Cayuga Sts., Philadelphia, Pa.

Barlow Foundry Co., 551 N. J. R. R. Ave., Newark, N. J.

Barnes Foundry Co., Jersey City, N. J.
(See page 215.)

Bay City Foundry & Machine Co., 1610 Water St., Bay City, Mich.
(See page 955.)

Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.

Bayer Foundries Co., 4067 Park Ave., St. Louis, Mo.

Bemiller Foundry & Machine Co.—See Eckhouse & Co.

Brady Foundry Co., James A., 45th St. & Western Blvd., Chicago, Ill.

Bridgeport Malleable Iron Works, Bridgeport, Conn.

Brown Clutch Co., 1737 S. Camp St., Sandusky, O.

Buch's Sons Co., A., Elizabethtown, Pa.

Byram Foundry Co., 921 Biddle St., Indianapolis, Ind.

C-W-C—See Campbell, Wyant & Cannon Foundry Co.

Calhoun Casting Co., 119 South St., Battle Creek, Mich.

Campbell Mfg. & Foundry Co., Muskegon, Mich.

Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich. "C-W-C."
(See page 213.)

Cantrill Hdw. & Tool Co., Reading, Pa.

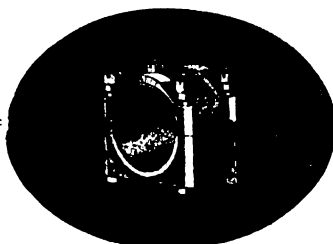
Central Mfg. Co., Fairfield, Iowa.

Challenge Machinery Co., Grand Haven, Mich.

Chapman Co., Berlin, Wis.

Cheney & Son., S., Manlius, N. Y.

Everything is listed under the NOUN or principal word



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A census of modern American automobiles and motor trucks would show few into which Doehler Die Castings had not been built. The last reckoning showed that over 80 per cent of the annual output of die-castings came from the big Doehler plants.

Quality is the outstanding reason for the general standardization on Doehler Die Castings. Manufacturers have learned by experience that anything less is not fully satisfactory. In the long run, Doehler Die Castings are not only most dependable, but also least expensive.

The die cast babbitt lined bearings pictured here are but one of hundreds of parts produced in quantity for the automotive industry. Bearings are made by thousands every month—babbitt lined bronze backs and the new aluminum backed type. Many parts formerly machined out are now made as "Do-Di" Finished Brass Castings.

The Company offers the advisory service of its engineering staff or is prepared to die-cast parts to your specifications.

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THE WORLD'S LARGEST MANUFACTURERS OF DIE CASTINGS

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CHICAGO, ILL.

SALES OFFICES IN ALL PRINCIPAL CITIES

DDC-25

CASTINGS, Grey Iron (Continued)

Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.)
(See page 121.)

City Brass Foundry Co., 5310 St. Clair Ave., N. E., Cleveland, O.

Clayville Iron Foundry & Machine Co., Clayville, N. Y.

Cochrane Brass Foundry, S. Richland Ave. & N. Central Tracks, York, Pa.

Cohoes Iron Foundry & Machine Co., 37 Van Rensselaer St., Cohoes, N. Y.

Connorsville Foundry Corp., 18th & Columbia Sts., Connorsville, Ind.

Detroit Brass & Malleable Works, 1177 Holden Ave., Detroit, Mich.

Detroit Foundry Co., 2642 E. Grand Blvd., Detroit, Mich.

Detroit Gray Iron Foundry Co., 6403-23 Wight St., Detroit, Mich.

Devlin Mfg. Co., Thos., Third & Lehigh Aves., Philadelphia, Pa.

Dutchess Foundry Co., 56-60 Pine St., Poughkeepsie, N. Y.

Eagle Foundry Co., Willard & Liberty Sts., Muncie, Ind.

Eastern Malleable Iron Co., Naugatuck, Conn.

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Hemiller Foundry & Machine Co., Bellville, O.)

(See page opposite Title Page.)
Efemco—See Foster, Merriam & Co.

Enterprise Foundry Co., 6463 E. Warren Ave., Detroit, Mich.

Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill.

Fairmount Foundry, 15th & Indiana Ave., Philadelphia, Pa.

Fanner Mfg. Co., Brookside Park, Cleveland, O.

Farrar & Trefts, Perry & Illinois Sts., Buffalo, N. Y.

Fay-Kultgen Foundry Co., E. Broad St., St. Joseph, Mich.

Federal Signal Co., Albany, N. Y.

Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.

Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.

Flannery Co., P. J., 33 Whiting St., New Britain, Conn.

Flour City Ornamental Iron Co., Minneapolis, Minn.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)

Foundry & Machine Products Co., 2263 Fordyce Ave., Detroit, Mich.

France Foundry & Machine Co. (N. Baltimore), Baltimore, O.

Fremont Foundry Co., Fremont, O.

Frontier Iron Works, 36 Letchworth St., Buffalo, N. Y.

Fulton Foundry & Machine Co., 25 Furman St., Brooklyn, N. Y.

G. & R. Foundry & Machine Co., 6½ St. & Penn R. R., Terre Haute, Ind.

Gale Mfg. Co., Albion St., Albion, Mich.

General Railway Signal Co., Rochester, N. Y.

Gillespie Eden Corp., 21st Ave., Paterson, N. J.

Globe Malleable Iron & Steel Co., 101 Greenway Ave., Syracuse, N. Y.

Great Lakes Foundry Co., 30th & Moak Sts., Port Huron, Mich.

Griewold Mfg. Co., 1055 W. 12th St., Erie, Pa.

Hart-Parry Co., Lawler St., Charles City, Ia.

Holmes Foundry Co., (South Port Huron), Port Huron, Mich.

Holyoke Moler Foundry Co., Holyoke, Mass.

Hood Furnace & Supply Co., Corning, N. Y.

Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.

Indiana Foundry Co., Tenth & Liberty Sts., Muncie, Ind.

Industrial Foundry Co., St. Johns, Mich.

Inland Steel Casting Co., 19th & Cedar Sts., Terre Haute, Ind.

Interstate Foundry Co., E. 61st St. & Roland Ave., Cleveland, O.

Iron City Foundry Co., Hamilton, O.

Johnson & Co., Isaac G., Spuyten Duyvil, New York, N. Y.

Kennedy Foundry Co., Charles & Wells Sts., Baltimore, Md.

L. N. N. Foundry, Cleveland, O.

Lakey Foundry & Machine Co., First & Water Sts., Muncie, Mich.

Lakewood Screw Machine Products Co., Cleveland, O.

Lansdale Foundry Co., Lansdale, Pa.

Lansing Foundry Co., Hazel & Hosmer Sts., Lansing, Mich.

Levering Bros., 200 Key Highway, Baltimore, Md.

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Long Island Foundry Co., 11th St. & East Ave., Long Island City, N. Y.

McCord & Co., 123 S. Michigan Ave., Chicago, Ill.

McLouth Co., Sidney C., Marine City, Mich.

Machinists Foundry Co., 1617 Macedonia Ave., Muncie, Ind.

Manufacturers Foundry Co., Waterbury, Conn. (See page 211.)

Mead & Cross Co., 309 Lafayette St., New York, N. Y.

Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.

Montpellier Mfg. Co., Montpellier, Ind.

Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.

Muncie Foundry & Machine Co., Muncie, Ind. (See page 205.)

Munson Mill Machinery Co., 405 Broadway, Utica, N. Y.

Murphy Foundry Co., Beaver Falls, Pa.

National Foundry Co. of N. Y., 10-40 Sanford St., Brooklyn, N. Y.

National Sewing Machine Co., Belvidere, Ill.

Naugatuck Malleable Iron Co., Naugatuck, Conn.

Nazareth Foundry & Machine Co., Nazareth, Pa.

New Haven Iron Works, New Haven, Mich.

Newark Stamping & Foundry Co., Newark, O.

Niagara Motors Corp., Dunkirk, N. Y.

North Wales Machine Co., Elm Ave. & Center St., North Wales, Pa.

Northern Foundry Co., 1360 Main St., Marietta, Wis.

Oxford Fdry. & Machine Co., Oxford, N. J.

Peerless Foundry Co., Carthage Pike & Township Ave., (Elmwood Place), Cincinnati, O.

Pequannock Foundry, Charlotte & Fifth Sts., Bridgeport, Conn.

Penn Foundry & Machine Co., Bath, Pa.

Peru Foundry Co., Peru, Ind.

Pittsburgh Iron & Steel Foundries Co., Oliver Bldg., Pittsburgh, Pa. "Adamite."

Portland Forge & Foundry Co., Portland, Ind.

Portland Foundry Co., Portland, Conn.

Production Foundries Co., Ann Arbor, Mich.

Racine Brass & Iron Co., 1327 Racine St., Racine, Wis.

Racine Foundry Co., Tenth St. & C., M. & St. F. Ry., Racine, Wis.

Everything is listed under the NOUN or principal word

C—W—C

MOTOR CASTINGS

A Foundry Operated by a Practical Organization with Latest Equipment

Our reputation for uniform metal, uniform measurements, uniform production and uniform weight insures our customers the maximum production from their machine tool equipment at minimum cost.

Our organization is complete in all departments, including chemical laboratory, pattern shop and machine shop.

Daily Capacity 500 Tons

Intricate Designs Our Specialty
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CAMPBELL, WYANT & CANNON
FOUNDRY COMPANY

MUSKEGON, MICH.

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CHAMPION BRASS WORKS

COLDWATER, MICH.

Manufacturers of
Solid-Brass and Copper Rivets
Brass-Bronze and Aluminum Castings

SERVICE AND QUALITY ASSURED

F. & J. Co. Malleable Iron Castings Will Stand This Severe Test



Fig. 6—Wedges Founded into Scrolls by Blows of 70 Foot-Pounds.

Send your inquiries to **FRAZER & JONES CO., SYRACUSE, N. Y.**

DECATUR

MALLEABLE IRON CASTINGS

DECATUR MALLEABLE IRON COMPANY
DECATUR ILLINOIS



PROTECT YOUR CAR
AND LUGGAGE WITH

NOPIK LOCKS

**SOMETHING
 NEW AND
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 IN LOCKS**

Nopik safety ignition locks.
 Nopik rivetless trunk locks.
 Nopik door and hood locks.
 Nopik tire locks.
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THE CONNECTICUT LOCK CO., Inc., Fairfield, Conn.

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Gray Iron Castings

All kinds of Cored work, medium and small.

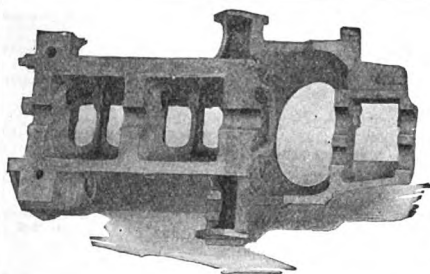
WE SPECIALIZE IN

PISTON CASTINGS (oversize)

RING POTS (from 2½" to 5¼")

2000 PISTON PATTERNS AT YOUR SERVICE

BARNES FOUNDRY CO., Jersey City, N. J.



We Specialize on
**Aluminum Crank
Cases**

They Will Reduce
Machining Costs

SEND PRINTS

The Wellman Bronze Company
Cleveland, Ohio

Malleable Iron Castings

Quality Producers



Quantity Producers

VERMILION MALLEABLE IRON CO.

205 NORTH SIXTH AVENUE

HOOPESTON, ILLINOIS

BRANCH OFFICES: 641 Railway Exchange Building, Chicago

AUTOMOBILE BEARINGS

OUR SPECIALTY

Finished or in the rough, or babbitt-lined

BRASS, BRONZE & ALUM. CASTINGS

Brass and bronze bushings carried in stock

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A. GILBERT & SONS BRASS FOUNDRY COMPANY

St. Louis, U. S. A.

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CASTINGS, Grey Iron (Continued)

Ready Foundry Co., 4000 Iowa St., Chicago, Ill.
 Reliance Foundry Co., 600 N. Eighth St., Richmond, Ind.
 Rincon Foundry Co., 249-65 Seventh St., San Francisco, Cal.
 Riverside Foundry Co., N. Front St., Wrightsville, Pa.
 Ryan Foundry Co., D. J., Mill St., Ecorse, Mich.
 St. Louis Malleable Casting Co., 7800 N. Broadway, St. Louis, Mo.
 Sani Products Co., 209 W. Randolph St., Chicago, Ill.
 Sanitary Co. of America, Linsfield, Pa.
 Schaefer Mfg. Co., Pearl St., Berlin, Wis.
 Sears Tire Equipment Co., Davenport, Ia. (See page 595.)
 Shaw Electric Crane Co., Muskegon, Mich.
 Shaw, Welsh & Co., Galesburg, Ill.
 Sibley Machine Co., 204-23 E. Tutt St., South Bend, Ind.
 Smith Mfg. Co., A. P., Norman & Lawrence Sts., East Orange, N. J.
 Smith Mfg. Co., Philip, Sidney, O.
 Sowers Mfg. Co., 1300 Niagara St., Buffalo, N. Y.
 Speldel, J. G., W. Buttonwood & Gordon Sts., Reading, Pa.
 Spencer's Sons Co., I. S., Fair St., Guilford, Conn.
 Spring City Foundry Co., St. Paul Ave. & State St., Waukegan, Wis.
 Standard Foundry Co., Racine, Wis.
 Stowell Co., South Milwaukee, Wis.
 Stroth Casting Co., 232 Chene St., Detroit, Mich.
 Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
 Susquehanna Casting Co., Wrightsville, Pa.
 Sweet & Doyle Fdry. & Machine Co., Center St. (Green Island), Troy, N. Y.
 Taylor & Boggis Foundry Co., Cleveland, O.
 Textile Machine Works, Reading, Pa.
 Tower City Foundry Co., Tower City, Pa.
 Turner & Seymour Mfg. Co., Lawton St. & R. R., Torrington, Conn.
 United Brass & Aluminum Mfg. Co., Goulden St., Port Huron, Mich.
 Universal Foundry Co., Pine & Warren Sts., Oshkosh, Wis.
 Vassar Foundry Co., Vassar, Mich.
 W. & K.—See Whitehead & Kales Co.
 Wabash Foundry Co., Carroll St., Wabash, Ind.
 Walsh, James F., 22 N. Clinton St., Chicago, Ill.
 Waterbury Castings Co., Railroad Hill St., Waterbury, Conn.
 Wayne Works, 16th & North F Sts., Richmond, Ind.
 Weller Hdw. & Fdry. Co., Main St., Horseheads, N. Y.
 Wellman-Seaver Morgan Co., 7000 Central Ave., Cleveland, O.
 Whitehead & Kales Co., Michigan & Beecher Sts., Detroit, Mich. "W. & K."
 Williamson Co., J. E., Bellwood, Pa.
 Wilson Foundry & Machine Co., Pontiac, Mich.
 Wisconsin Aluminum Foundry, 16th & Franklin Sts., Manitowoc, Wis.
 Wisconsin Cylinder Foundry Co., 1303 13th St., Racine, Wis.
 Wisconsin Foundry & Machine Co., Madison, Wis.
 Zenith Foundry Co., Miller Ave., Detroit, Mich.

CASTINGS, IRON—See Castings, Grey Iron; also Castings, Malleable Iron

CASTINGS, Malleable Iron

Acme Steel & Malleable Iron Works, 246 Military Rd., Buffalo, N. Y.
 Albion Malleable Iron Co., Albion, Mich.
 American Malleable Castings Co., 740 W. Center St., Marion, O.
 American Malleables Co., Kresge Bldg., Detroit, Mich.
 Arcade Malleable Iron Co., Albany St., Worcester, Mass.
 Auto Specialties Mfg. Co., St. Joseph, Mich. (See page 463.)
 Badger Malleable & Mfg. Co., 223 N. Chicago Ave., South Milwaukee, Wis.
 Baltimore Malleable Iron & Steel Casting Co., Charles & Wells Sts., Baltimore, Md.
 Belle City Malleable Iron Co., 1500 Kewaunee St., Racine, Wis.
 Benton Harbor Malleable Foundry Co., Benton Harbor, Mich.
 Bridgeport Malleable Iron Works, Bridgeport, Conn.
 Buckeye Jack Mfg. Co., Alliance, O.
 Buhl Malleable Iron Co., 230 Wight St., Detroit, Mich.
 Central Service Corp., 1607 Merchants' Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
 Chicago Malleable Castings Co., 718 Book Bldg., Detroit, Mich. (See page 207.)
 Chicago Malleable Castings Co., 120th St. & S. Racine Ave., Chicago, Ill.
 Chicago Malleable Castings Co., West Pullman, Ill.
 Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 121.)
 Chisholm-Moore Mfg. Co., Lakeside Ave. & E. 49th St., Cleveland, O.
 Columbus Malleable Iron Co., Curtis Ave., Columbus, O.
 Danville Malleable Iron Co., 908 N. Bowman Ave., Danville, Ill.
 Dayton Malleable Iron Co., Dayton, O.
 Dayton Malleable Iron Co., Ironton, O.
 Decatur Malleable Iron Co., Decatur, Ill. "Delta." (See page 214.)
 Delta—See Decatur Malleable Iron Co.
 Detroit Brass & Malleable Works, 1177 Holden Ave., Detroit, Mich.
 Devlin Mfg. Co., Thos., Third & Lehigh Aves., Philadelphia, Pa.
 Eastern Malleable Iron Co., Naugatuck, Conn.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Erie Malleable Iron Co., 13th & Cherry Sts., Erie, Pa.
 Fanner Mfg. Co., Brookside Pk., Cleveland, O.
 Federal Malleable Co., West Allis, Wis.
 Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.
 Fort Pitt Malleable Iron Co., Pittsburgh, Pa.
 Fraser & Jones Co., Syracuse, N. Y. (See page 214.)
 General Malleable Co., Griswold St., Warren, O.
 Gilliam Mfg. Co., Canton, O. (See page 110.)
 Globe Malleable Iron & Steel Co., 101 Greenway Ave., Syracuse, N. Y.
 Illinois Malleable Iron Co., 1801-25 Diversey Blvd., Chicago, Ill.

Everything is listed under the NOUN or principal word



Quality Castings



If you would visit our wonderfully equipped plant at Waterbury and see how our castings are made, you would understand our reasons for calling them "quality castings."

Everything that can assure a finished product, free from flaws of construction or errors of design, is carried out in our foundry. We are specialists in the manufacture of castings. Our formulæ are based on actual experience. We have increased our capacity to meet the growing demand for our superior castings. Our experience in this line guarantees you a perfect product.

**MANUFACTURERS
FOUNDRY CO.
WATERBURY, CONN.**



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CASTINGS, Malleable Iron (Continued)

Inland Steel Casting Co., 19th & Cedar Sts., Terre Haute, Ind.
 Jamestown Malleable Products Corp., Fenton Bldg., Jamestown, N. Y.
 Jewell Steel & Malleable Co., 373 Hertel Ave., Buffalo, N. Y.
 Kalamazoo Malleable Iron Co., N. Pitcher St., Kalamazoo, Mich.
 Kennedy Foundry Co., Charles & Wells Sts., Baltimore, Md.
 Kokomo Malleable Iron Co., Kokomo, Ind.
 L. N. N. Foundry, Cleveland, O.
 Lancaster Foundry Co., Lancaster, Pa.
 Mal-Gra Castings Co., Cambridge City, Ind.
 Malleable Iron Fittings Co., Branford, Conn. (See page 259.)
 Marion Malleable Iron Works, Marion, Ind. (See page 221.)
 Meeker Foundry Co., 95 Clay St., Newark, N. J.
 Missouri Malleable Iron Co., 15th St. & Bradley Ave., East St. Louis, Ill.
 Moline Iron Works, 228 Second St., Moline, Ill.
 Muncie Malleable Foundry Co., Highland Ave., Muncie, Ind.
 National Malleable Castings Co., Chicago, Ill.
 National Malleable Castings Co., East St. Louis, Ill.
 National Malleable Castings Co., Indianapolis, Ind.
 National Malleable Castings Co., Melrose Park, Ill.
 National Malleable Castings Co., 10600 Quincy Ave., Cleveland, O.
 Naugatuck Malleable Iron Works, Naugatuck, Conn.
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
 Northern Malleable Iron Co., 867 Forest St., St. Paul, Minn.
 Northwestern Malleable Iron Co., 756 Park St., Milwaukee, Wis.
 Ohio Malleable Iron Co., Columbus, O. (See page 219.)
 Pittsburgh Malleable Iron Co., Pittsburgh, Pa.
 Platt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill.
 Pressed Steel Car Co., 307 Fifth Ave., Pittsburgh, Pa.
 Racine Steel Castings Co., 1524 Kewaunee St., Racine, Wis.
 Rhode Island Malleable Iron Works, Hillsgrove, R. I.
 Richmond Malleable Castings Co., Washington Ave., Richmond, Ind.
 Rockford Malleable Iron Works, Peoples Ave. & O. B. & Q. Tracks, Rockford, Ill.
 Ross-Mecham Foundries, Chattanooga, Tenn.
 Saginaw Malleable Iron Co., Center & Salt Sts., Saginaw, Mich.
 St. Louis Car Co., 3000 N. Broadway, St. Louis, Mo.
 St. Louis Malleable Castings Co., 7300 N. Broadway, St. Louis, Mo.
 Smith Wheel, Inc., Syracuse, N. Y. (See page 945.)
 South Side Malleable Casting Co., Windlake & 14th Aves., Milwaukee, Wis.
 Springfield Malleable Iron Co., Bechtie Ave. & Big Four R. R., Springfield, O.
 Standard Malleable Castings Co., Terre Haute, Ind.
 Stowell Co., South Milwaukee, Wis.
 Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
 Symington Co., T. H., Rochester, N. Y.

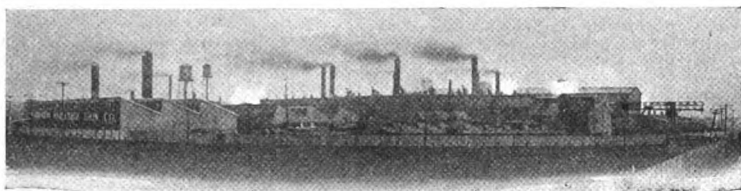
Temple Malleable Iron & Steel Co., Harrison Bldg., Philadelphia, Pa.
 Terre Haute Malleable & Mfg. Co., 19th St. & Maple Ave., Terre Haute, Ind.
 Trenton Malleable Iron Co., New York Ave., Trenton, N. J.
 Troy Malleable Iron Works, Troy, N. Y.
 Union Malleable Iron Co., East Moline, Ill.
 United States Malleable Iron Co., Woodville St., Toledo, O.
 Vermillion Malleable Iron Co., 205 N. Sixth Ave., Hoopeston, Ill. (See page 215.)
 Vulcan Iron Works, 63 John St., New Britain, Conn.
 Walsh, James F., 32 N. Clinton St., Chicago, Ill.
 Wanner Malleable Iron Co., 723 Summer St., Hammond, Ind.
 Waukesha Malleable Iron Co., Waukesha, Wis.
 Western Malleable Co., Beaver Dam, Wis.
 Wilmington Malleable Iron Works, Wilmington, Del.
 Woodruff & Sons Co., Walter W., Mt. Carmel, Conn.
 Zanesville Malleable Co., Zanesville, O.

CASTINGS, Steel

Acme Steel Co., Beech St., Akron, O.
 Adamite—See Pittsburgh Iron & Steel Foundries Co.
 American Manganese Steel Co., 322 S. Michigan Ave., Chicago, Ill. "Amsco."
 American Radiator Co., 1807 Elmwood Ave., Buffalo, N. Y.
 American Steel Foundries, McCormick Bldg., Chicago, Ill.
 Amsco—See American Manganese Steel Co.
 Atlantic Foundry Co., 132 Beaver St., Akron, O.
 Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.
 Bayonne Steel Casting Co., Bayonne, N. J.
 Belle City Malleable Iron Co., 1500 Kewaunee St., Racine, Wis.
 Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
 Bonney-Floyd Co., Columbus, O.
 Buhl Malleable Iron Co., 230 Wight St., Detroit, Mich.
 Burnside Steel Co., Railway Exchange Bldg., Chicago, Ill.
 Chester Steel Castings Co., Seventh St., Chester, Pa.
 Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 121.)
 Chicago Steel Foundry Co., 3720 S. Kedzie Ave., Chicago, Ill.
 Cincinnati Steel Castings Co., Queen City & Spring Grove Aves., Cincinnati, O.
 Connecticut Electric Steel Co., 540 Flatbush Ave., Hartford, Conn.
 Connersville Foundry Corp., 18th & Columbia Sts., Connersville, Ind.
 Crucible Steel Casting Co., Union Ave. & Railroad, Lansdowne, Pa.
 Crucible Steel Casting Co., 612 Clinton St., Milwaukee, Wis.
 Damascus Crucible Steel Casting Co., New Brighton, Pa.
 Dayton Steel Foundry Co., Dayton, O. (See page 945.)
 Detroit Steel Casting Co., 4069 Michigan Ave., Detroit, Mich.
 Duquesne Steel Foundry Co. (Kendall Sta.) Pittsburgh, Pa.

Everything is listed under the NOUN or principal word

Guaranteed Malleable Castings



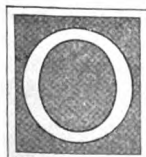
Plant of The Ohio Malleable Iron Co., Columbus, Ohio
CAPACITY—30,000 TONS ANNUAL OUTPUT

We Specialize in Castings

FOR THE

Automobile Industry

Entire process supervised by
trained Metallurgists and
Chemists *in our own plant* in-
sures Castings of high tensile
strength and machinability.



TRADE MARK

May we have the opportunity of
quoting on your requirements?

The Ohio Malleable Iron Co.
Columbus, Ohio

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CASTINGS, Steel (Continued)

- Egan-Rogers Steel & Iron Co.**, Crum Lynae, Pa.
Eastern Steel Castings Co., 30 Kemble St., Boston, Mass.
Electric Steel Co. of Indiana, Indianapolis, Ind.
Electro Steel Co., Pittsburgh, Pa.
Emery Steel Castings Co., Continental Bldg., Baltimore, Md.
Fair & Son, S., Saginaw, Mich.
Farrell-Cheek Steel Foundry Co., ft. First St., Sandusky, O.
Firth & Son Co., Rowland, Phillipsburg, N. J.
Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.
Fort Pitt Steel Casting Co., McKeesport, Pa.
Gerlinger Electric Steel Castings Co., 60th St. & National Ave., West Allis, Wis.
Hercules Steel Casting Co., 871-91 Robinson Ave., Milwaukee, Wis.
Hubbard Steel Foundry Co., McCormick Bldg., East Chicago, Ind.
Industrial Steel Casting Co., Toledo, O.
Inland Steel Casting Co., 19th & Cedar Sts., Terre Haute, Ind.
Interstate Foundry Co., E. 61st St. & Roland Ave., Cleveland, O.
Jewell Steel & Malleable Co., 373 Hertel Ave., Buffalo, N. Y.
Johnson & Co., Isaac G., Spuyten Duyvil, New York, N. Y.
Kennedy Foundry Co., Charles & Wells Sts., Baltimore, Md.
Keokuk Steel Casting Co., Commercial Alley, Keokuk, Ia.
Lebanon Steel Foundry, Front & Lehman Sts., Lebanon, Pa.
McCord & Co., 123 S. Michigan Ave., Chicago, Ill.
Malleable Iron Fittings Co., Branford, Conn. (See page 259.)
Massillon Steel Casting Co., Massillon, O.
Maynard Electric Steel Casting Co., 23d Ave. & Kilbourn Rd., Milwaukee, Wis.
Michigan Steel Casting Co., 1986 Gurin St., Detroit, Mich.
Milbury Steel Foundry Co., Milbury, Mass.
Milton Mfg. Co., Milton, Pa.
Milwaukee Steel Foundry Co., 101 S. Water St., Milwaukee, Wis.
Modern Steel Casting Co., Milwaukee, Wis. (See page 221.)
Monarch Steel Castings Co., 129 Solvay Ave., Detroit, Mich.
Monroe Steel Castings Co., Front St., Monroe, Mich.
Muholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.
National Steel Casting Co., Montpelier, Ind.
National Steel Foundries, ft. of Bellevue Pl., Milwaukee, Wis.
New England Steel Co., East Longmeadow, Mass.
New Haven Iron Works, New Haven, Mich.
Ohio Steel Foundry Co., Springfield, O.
Pelton Steel Co., 673 Kinnickinnie Ave., Milwaukee, Wis.
Philadelphia Roll & Machine Co., Philadelphia, Pa.
Pittsburgh Iron & Steel Foundries Co., Oliver Bldg., Pittsburgh, Pa. "Adamsite."
Pressed Steel Car Co., 307 Fifth Ave., Pittsburgh, Pa.
Pyro—See Swedish Crucible Steel Co.
Racine Steel Castings Co., 1524 Kewaunee St., Racine, Wis.
Reading Steel Casting Co., Reading, Pa.
- Reed Foundry & Machine Co.**, Kalamazoo, Mich.
Riverside Steel Casting Co., Newark, N. J.
Ryan Foundry Co., D. J., Mill St., Boorse, Mich.
Sivyer Steel Casting Co., 37th Ave. & Mitchell St., Milwaukee, Wis.
Smith Steel Castings Co., Geo. H., 500 Clinton St., Milwaukee, Wis.
Standard Crucible Steel Castings Co., 719 30th St., Milwaukee, Wis.
Standard Steel Castings Co., Hickox Bldg., Cleveland, O.
Stowell Co., South Milwaukee, Wis.
Strong Steel Foundry Co., Hertel Ave. & Norris St., Buffalo, N. Y.
Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
Swedish Crucible Steel Co., Butler Ave. & G. T. R. R., Detroit, Mich. "Pyro."
Taylor Co., W. P., 577 Howard St., Buffalo, N. Y.
Taylor-Wharton Iron & Steel Co., High Bridge, N. J. "Tisco."
Tisco—See Taylor-Wharton Iron & Steel Co.
Toledo Steel Casting Co., Monroe & Detroit Sts., Toledo, O.
Treadwell Engineering Co., 25th & Lennox Sts., Easton, Pa.
Twin City Forge & Foundry Co., Stillwater, Minn.
Union Steel Casting Co., Bartlett Sq. (Jamaica Plain), Boston, Mass.
Walsh, James F., 32 N. Clinton St., Chicago, Ill.
Warren Steel Casting Co., 3400 Maury Ave., St. Louis, Mo.
Wehr Steel Co., 45th & Gordon Aves., West Allis, Wis.
Wellman-Seaver Morgan Co., 7000 Central Ave., Cleveland, O.
West Michigan Steel Foundry Co., 580 Western Ave., Muskegon, Mich.
West Steel Casting Co., 805-41 E. 70th St., Cleveland, O.
Western Crucible Steel Casting Co., 2223 Grand Ave., S., Minneapolis, Minn.
Wharton, Jr. & Co., Wm., Easton, Pa.
Whitman Co., A. P., Fourth & Booth Sts., Chester, Pa.

CASTLE NUTS—See Nuts, Castalated**CASTOR OIL—See Oil, Castor****CASTORS, WRECKING—See Trucks, Wrecking****CASTORS and WHEEL TRUCKS**

(For turning cars in Garages; see also Turntables, Automobiles)

- Service Caster & Truck Co.**, 2523 Southwest Blvd., Kansas City, Mo.
Weber Portable Turn-Table Trucks, 6 E. Kiowa St., Colorado Springs, Colo.
Zering Mfg. Co., H., 4427 Appleton Ave., Cincinnati, O.

CATCHES and FASTENERS, Spring Cabinet

(For Keel Boards, Bases or Cabinets)

- Bassick Co.**, Bridgeport, Conn. (See page 311.)
Brainerd Mfg. Co. (East Rochester), Rochester, N. Y.

Everything is listed under the NOUN or principal word

"MORSE" Lighting Appliances

for
Automobiles and
Motor Boats

Lamps, Switches, Sockets
Connectors, Adapters and
Cord and Cable

Largest Line
Largest Stock
Promptest Deliveries

Send for Illustrated Catalogue

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289 Congress St., BOSTON, MASS.

STEEL CASTINGS



MODERN STEEL CASTING CO.
MILWAUKEE, WIS.

MARION MALLEABLE IRON WORKS MARION, INDIANA

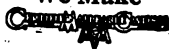
MANUFACTURERS OF

CERTIFIED MALLEABLE IRON CASTINGS

FOR

AUTOMOBILES AND TRACTORS

We Make



Specify Them

PATTERN SHOP IN CONNECTION

Please mention The Automobile Trade Directory

CATCHES and FASTENERS, Spring Cabinet (Continued)

Brass Goods Mfg. Co., 345 Eldert St., Brooklyn, N. Y.
Corbin Cabinet Lock Co., New Britain, Conn.
Sargent & Co., Water & Wallace Sts., New Haven, Conn.
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

CELLULOID CEMENT—See Cement, Celluloid

CELLULOID CLEANERS—See Cleaners, Celluloid

CELLULOID CURTAIN LIGHTS—See Lights, Curtain

CELLULOID, Sheet

(For window in curtains and storm fronts)

Celluloid Co., 30 Washington Pl., New York, N. Y.
du Pont de Nemours & Co., E. L., (Pyralin Division) Wilmington, Del.
Fiberloid Co., 55 Fifth Ave., New York, N. Y.
Ten Eick, Cornellus, 253 W. 47th St., New York, N. Y. (Distributor.)
(See page 81.)
Viscoloid Co., Leominster, Mass.

CEMENT, Cast Iron

(For repairing cracks in castings; for cement for repairing leaky radiators—See Cement, Radiator)

Adam, Inc., Hector C., 480 Lexington Ave., New York, N. Y. "Fuseon." (Importer.) (See page 323.)
Albertus & Co., F. A., 208 Ninth St., Milwaukee, Wis.
Brand Co., S. H., 559 W. Lake St., Chicago, Ill.
Central Foundry Supply Co., St. Clair Ave. & P. R. R., Columbus, O.
Clark Cast Steel Cement Co., Corain Ave., Shelton, Conn. "Steamtite."
Clasby Mfg. Co., 905 N. Main St., Pueblo, Colo. "Singer's."
F. A. A.—See Albertus & Co.
Fuseon—See Adam, Hector C.
Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker."
(See page 655.)
Neu Metal Products Corp., 247 Water St., Binghamton, N. Y.
Northwestern Chemical Co., 785 State St., Marietta, O. (See page 275.)
Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans.
Shelton Metallic Filler Co., Derby, Conn.
Singer's—See Clasby Mfg. Co.
Smooth-On Mfg. Co., 572 Communipaw Ave., Jersey City, N. J.
Steamtite—See Clark Cast Steel Cement Co.
Stevens, Frederic B., Third & Larned Sts., Detroit, Mich.
Walker Battery Service, 233 Scott St., San Francisco, Cal.
Wonder Worker—See Hall-Thompson Co.

CEMENT, Celluloid

(For repairing curtain lights)

Auto Products Co., 5739 Elmer St., Pittsburgh, Pa. "Cellu-Fix."

Auto Products Mfg. Co., Buffalo, N. Y. "Nev-R-Stitch."

Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 343.)

Bingo—See Manufacturers' Distributing Co.
Cellu-Fix—See Auto Products Co.

Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Xylolene."

Dutch—See Van Cleef Bros.

Manufacturers' Distributing Co., 210-11 Lincoln Bldg., Detroit, Mich. "Bingo."
(See page 325.)

Nev-R-Stitch—See Auto Products Mfg. Co.
Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Xylolene—See Dealers Motor Supply Corp.

CEMENT, Gasket

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite."
(See page 267.)

Ad-el-ite—See Adams & Elting Co.

Anchor—See National Rubber & Specialties Co.

Auto Products Mfg. Co., Buffalo, N. Y. "Tite-R-On."

Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 343.)

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."

Be-Be-Co.—See Boston Blacking Co.

Baum's Castorine Co., 104 N. George St., Rome, N. Y.

Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

Buffalo Specialty Co., Buffalo, N. Y. "Holdfast." (See page 269.)

Bulls-Eye—See Zinsser & Co.

Butler-Harley Co., 33d & Master Sts., Philadelphia, Pa. "Harco."

Cactus—See Automotive Supply Co.

Columbus Varnish Co., Columbus, "Peerless." (See page 341.)

Cuban—See Rust-Off Mfg. Co.

Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Danno."

Danno—See Dannenhirsch Co.

Day & Co., James B., 224-26 W. Superior St., Chicago, Ill. "Gaskalac."

Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Xylo."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—See Van Cleef Bros.

E-Fec-Tiv—See Permatite Mfg. Co.

Ebersson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.

Ferdinand & Co., L. W., 152 Kneeland St., Boston, Mass.

Form-A-Gasket—See Permatex Co.

Fossilac—See Mid West Co.

Gasko—See Van Sickle Mfg. Co.

Gaskalac—See Day & Co.

Gasketite—See Woodtite Laboratories.

Gasketlac—See Indianapolis Paint & Color Co.

Go-Co Compound Co., 206 E. 67th St., New York, N. Y.

Harco—See Butler-Harley Co.

Holdfast—See Buffalo Specialty Co.

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

I. C. U.—See Livingston Co.

Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Gasketlac."

Liberty Chemical Works, Chicago, Ill. (See page 783.)

Everything is listed under the NOUN or principal word

CEMENT, Gasket (Continued)

- Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
- Lowe Mfg. Co., J. H., Auburn Rd., Seneca Falls, N. Y. "Owl."
- Magic—See Morse Co.
- Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa. "3 in 1."
- Mid West Co., 30 Iowa Ave. S. W., Grand Rapids, Mich. "Fossilac."
- Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.
- Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
- Moco Co. of America, 13th & Santa Fe Sts., Oklahoma City, Okla. "Monkey Grip."
- Monkey Grip—See Moco Co. of America.
- Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
- Morse Co., L. E., 205 N. Hyde Park Ave., Scranton, Pa. "Magic."
- Nation Co., 332 W. 16th St., Los Angeles, Cal.
- National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Anchor."
- New Metal Products Corp., 247 Water St., Binghamton, N. Y. "Old Roman."
- Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)
- Norwesco—See Northwestern Chemical Co.
- Noxal Polish Mfg. Co., 1238 Belmont Ave., Philadelphia, Pa.
- Nu-Back Mfg. Co., 113-15 S. Second St., St. Louis, Mo.
- Old Roman—See New Metal Products Corp.
- Owl—See Lowe Mfg. Co.
- P & R Auto Specialty Mfg. Co., 1680 Eastern Parkway, Brooklyn, N. Y. "Two Star." (See page 279.)
- Peerless—See Columbus Varnish Co.
- Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 623.)
- Permatex Co., Sheephead Bay, N. Y. "Form-A-Gasket." (See page 277.)
- Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
- Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
- Rie-Nie—See Durkee-Atwood Co.
- Rust-Off Mfg. Co., 133 Northampton St., Buffalo, N. Y. "Sealac," "Cuban."
- Sealac—See Rust-Off Mfg. Co.
- 3 in 1—See Mengo Products Co.
- Tite-R-On—See Auto Products Mfg. Co.
- Two-Star—See P & R Auto Specialty Mfg. Co.
- Van Cleaf Bros., 7799-11 Woodlawn Ave., Chicago, Ill. "Dutch."
- Van Sickle Mfg. Co., Lincoln, Neb. "Gasko."
- Whiz—See Hollingshead Co.
- Woodtite Laboratories, Modesto, Cal. "Gaskette."
- Xylo—See Dealers Motor Supply Corp.
- Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."
- CEMENT, IRON—See Cement, Cast Iron**
- CEMENT, Linoleum**
- Ferdinand & Co., L. W., 153 Kneeland St., Boston, Mass. "20th Century."
- 20th Century—See Ferdinand & Co.
- CEMENT, METAL—See Cement, Cast Iron**
- CEMENT, Radiator Repair**
(For repairing or sealing leaks in radiators)
- Ajaco—See Alsdorf Corp.
- Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)
- Ad-el-ite—See Adams & Elting Co.
- Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."
- Alwas-Hold Auto Products Co., 6929 Stony Island Ave., Chicago, Ill.
- American—See Crum Mfg. Co.
- An-Ti-Le-Ko—See Ball Products Co.
- Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. (See page 279.)
- Auto Products Mfg. Co., Buffalo, N. Y. "Quick-R-Fix."
- Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats-All." (See page 343.)
- B. A. T. Co., Germantown & Stanton Aves., Philadelphia, Pa. "Panther."
- Ball Products Co., 238 Bates St., Detroit, Mich. "An-Ti-Le-Ko."
- Baum's Castorine Co., 104 N. George St., Rome, N. Y.
- Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
- Beats-All—See Auto Specialties Mfg. Co.
- Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.
- Blue Ribbon—See International Metal Polish Co.
- Borgs Co., Kirk A., Fort Dodge, Iowa "Macco."
- Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
- Buffalo Specialty Co., Buffalo, N. Y. "Neverleak." (See page 269.)
- Bush Chemical Co., St. Louis, Mo.
- Butler-Harley Co., 33d & Master Sts., Philadelphia, Pa. "Harco."
- Camden Chemical Mfg. Co., 15th & Mickie Sts., Camden, N. J. "Grayhound."
- Campbell, V. R., 126 Penna. Ave., Elmira N. Y. "Victor."
- Check—See O-K Auto Supply.
- Crum Mfg. Co., 815 E. Second St., Wichita, Kans. "Radi-No-Leak," "American."
- Cummings Bros., 901-03 S. Saginaw St., Flint, Mich. "Stoppit."
- Cure-A-Leak—See Dannenhirsch Co.
- Dam-A-Leak—See Perma-Loc Mfg. Co.
- Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Cure-A-Leak."
- Day & Co., James B., 224-26 W. Superior St., Chicago, Ill.
- Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Radco."
- Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
- E-Fec-Tiv—See Permatite Mfg. Co.
- Gee-Bee—See Green Bay Supply Co.
- Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."
- Grayhound—See Camden Chemical Mfg. Co.
- Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder-Worker." (See page 655.)
- Harco—See Butler-Harley Co.
- Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whiz."
- International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
- Johnson & Son., S. C., 1012 16th St., Racine, Wis.
- Karbonold Chemical Co., 313 East Ave., Elyria, O. "No-Le-Ko."
- Leak Cure Metal Cement Co., 110 Fulton St., New York, N. Y.
- Liberty Auto Accessory Mfg. Works, 225 Michigan Ave., Jackson, Mich. (See page 225.)
- Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."

Everything is listed under the NOUN or principal word

CEMENT, Radiator Repair (Continued)

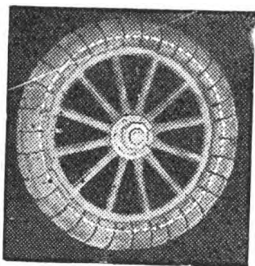
Linsco—See Lins Mfg. Co.
 Lowe Mfg. Co., J. H., Auburn Rd., Seneca Falls, N. Y. "Owl."
 Mecco—See Boggs Co.
 Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.
 Mid West Co., 30 Ionia Ave. S. W., Grand Rapids, Mich.
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
 Moco—See Tungsten Mfg. Co.
 Moco Co. of America, 13th and Santa Fe Sts., Oklahoma City, Okla. "Monkey Grip."
 Monkey Grip—See Moco Co. of America.
 Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
 Mormiles Co., 416 Sherman St., Chicago, Ill.
 Nation Co., 332 W. 16th St., Los Angeles, Cal.
 National Chemical Co., Canal Fulton, O. "Quick-Seal."
 Neverleak—See Buffalo Specialty Co.
 No-Le-Ko—See Karbonoid Chemical Co.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Se-Ment-OL" (See page 275.)
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Radi-Mend."
 NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 O-K Auto Supply, 512 S. First St., Blackwell, Okla. "Check."
 Owl—See Lowe Mfg. Co.
 Panther—See E. A. T. Co.
 Peerless Auto Specialty Corp., 133 St. Paul St., Rochester, N. Y.
 Perma-Loc Mfg. Co., Wilkes-Barre, Pa. "Dam-A-Leak." (See page 623.)
 Permatex Co., Sheepshead Bay, N. Y. (See page 277.)
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
 Quick-Seal—See National Chemical Co.
 Quik-R-Fix—See Auto Products Mfg. Co.
 Radco—See Dealers Motor Supply Corp.
 Radi-Mend—See Nu-Back Mfg. Co.
 Radi-No-Leak—See Crum Mfg. Co.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rie-Nie—See Durkee-Atwood Co.
 Ryden Supply Co., 302 E. Lake St., Minneapolis, Minn. "Shurmend."
 Se-Ment-OL—See Northwestern Chemical Co.
 Smooth-On Mfg. Co., 618 Communipaw Ave., Jersey City, N. J.
 Sterne Corp., New York, N. Y. (See page 266.)
 Stix-Tite—See Guaranty Tire & Vulcanizing Co.
 Stone Solder Co., 3107 Detroit Ave., Cleveland, O.
 Stoppit—See Cumings Bros.
 Shurmend—See Ryden Supply Co.
 Suresal Mfg. Co., 9 Centre St., Auburn, Me.
 Tungsten Mfg. Co., Marshalltown, Ia. "Moco." (See page 647.)
 Universal Solder Co., Fort & Beaubien Sts., Detroit, Mich.
 U. S. Automatic Spring Co., Napoleon, O.
 Victor—See Campbell, V. R.
 Whiz—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.
 "X" Laboratories, 26 W. 45th St., New York, N. Y.
 Z & A Mfg. Co., Hazelton, N. Dak.

CEMENT, RUBBER—See Cement, Tire Repair**CEMENT, Tire Repair**

(Rubber Cement for repairing or patching shoes and tubes; for cement for filling cuts in shoes—See Compounds, Tire Repair)

Acme Supply Co., 113 Dexter St., Ionia, Mich.
 Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 871.)
 American Rubber & Tire Co., 100 Beech St., Akron, O. "Stickfast."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill.
 Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Tire-Doh." (See page 279.)
 Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Blehl, G. M., 204 S. Centre St., Pottsville, Pa.
 Blue Ribbon—See International Metal Polish Co.
 Bowes Co., Robert M., 124-26 E. Ohio St., Indianapolis, Ind. "Seal-Fast."
 Buco—See Burgin & Co.
 Bull Dog—See Page-Lester Co.
 Bull Grip, 57-61 Eugenia St., Atlanta, Ga.
 Burgin & Co., 487 Broadway, New York, N. Y. "Buco."
 C. O. T.—See Tingley & Co.
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalite."
 Cox, David H., 312 Chestnut St., Roselle, N. J.
 Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Xylo."
 Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga., "Holdfast."
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Dutch—See Van Cleef Bros.
 E-Fec-Tiv—See Permatite Mfg. Co.
 Eclipse Cement & Blacking Co., 1335 Belmont Ave., Philadelphia, Pa. "Tiger."
 Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "J. E."
 Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.
 Ever Right—See Fry, Keyser.
 Farr's Sure-Hold Tire Cement Co., 114 Lawrence St., New York, N. Y. "Sure-Hold."
 Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
 Fry, Keyser, 616-23 N. Eighth St., Reading, Pa. "Ever Right."
 General Tire & Rubber Co., E. Market St., Akron, O.
 Goodrich Co., E. F., S. Main St., Akron, O. "Titan."
 Goodbar Rubber Co., 40 Wilder St., Minneapolis, Minn.
 Goodyear Tire & Rubber Co., Akron, O.
 Guaranty Tire & Vulcanizing Co., Fort Dodge, Ia. "Stix-Tite."
 Hadley Bros.-Uhl Co., 3948-53 W. Pine Blvd., St. Louis, Mo. "Okeh."
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 655.)
 Heal-A-Cut—See United States Tire Co.
 Henry's—See Perfectfix Rubber Co.
 Holdfast—See Diamond Holdfast Rubber Co.
 Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 835.)
 International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Iowa Cord Tire Co., Fleming Bldg., Des Moines, Iowa.
 J. E.—See Eno Rubber Co.

Everything is listed under the NOUN or principal word



Liberty Chain and Tire Saver

When installed they save 90% of blowouts, punctures, cuts of casings. You can also drive through mud and sand easily for they serve as a non-skid chain.

Include in your order a quantity of our Liberty Radiator repair. It is guaranteed.

These two articles are fast sellers and bring big profits. Prices and commissions gladly given. Every garage, repair-shop and accessory dealer should have them.

Liberty Auto Accessory Mfg. Works
225 Michigan Ave., Jackson, Mich.

*This Fall and Winter Will Bring
Bigger Sales for*

Giant Grip Traction Equipment for Motor Trucks

No matter how powerful the truck, its wheels must have traction when rain, snow and ice make roads slippery or sand or mud make going heavy. **GIANT GRIP TRACTION EQUIPMENT** keeps trucks moving in spite of any kind of road condition. Digs into the road and the truck must go. Clamps permanently attached. Chains kept in tool box until needed. Two minutes' work does the job. No tools or jacking required. Dealers should get our proposition before bad weather starts.

GIANT GRIP MFG. CO., Oshkosh, Wis



REICHERT EMERGENCY TIRE CHAIN No. 220



Reichert's Emergency Tire Chains are easily and quickly adjusted when you are in trouble. Place the malleable clamp on the spoke, then slip the chain over the tire and hook the snap in the loop—that's all. No jacks or tools required.

A set of four chains, packed in a bag, is sufficient to pull you out of the mud, sand or snow.

Important—State size of tires when ordering.

Write for descriptive circular
IMPERIAL BIT & SNAP CO.
Racine, Wis.

REDMANOL

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PAT. OFF.

Perfect Molding Compound



Redmanol Qualities

Resistance to extreme heat.
Exceptionally high dielectric strength.
Great mechanical strength.
Excellent acid resistance.
Unusual accuracy of dimensions.
Singular beauty of finish.

IMPORTANT!

Our Engineering Service Department is equipped to render service in research or experimental work, without cost to you.

Redmanol Chemical Products Co., Engineering Service Dept. 686 W. 22nd St., Chicago, Ill.

Please mention The Automobile Trade Directory

CEMENT, Tire Repair (Continued)

Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.
 Locktite Patch Co., Detroit, Mich.
 (See page 621.)
 Lok-Seal—See Stephens Rubber Co.
 Majestic Auto Products Corp., 2 Columbus Circle, New York, N. Y. "Neverflat."
 Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
 Menzo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.
 Michelin Tire Co., Milltown, N. J.
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Miller Rubber Co., Akron, O.
 Moco Co. of America, 13th & Santa Fe Sts., Oklahoma City, Okla. "Monkey Grip."
 Monkey Grip—See Moco Co. of America.
 Money-Back Laboratories, 5 N. Dewey St., Oklahoma City, Okla.
 National Chemical Co., Canal Fulton, O. "Quick Seal."
 National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Red Cross."
 Neverflat—See Majestic Auto Products Corp.
 Okeh—See Hadley Bros.-Uhl Co.
 P. P. & B.—See St. Louis Rubber Cement Co.
 Page-Lester Co., 2644 Indiana Ave., Chicago, Ill. "Bull Dog."
 Parks & Co., F. B., 25 Prescott St., Grand Rapids, Mich.
 Perfectfix Rubber Co., Greenbay Rd., Milwaukee, Wis. "Henry's."
 Perma-Lee Mfg. Co., Wilkes-Barre, Pa.
 (See page 623.)
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Polson Rubber Co., 1657 Doan Ave., Cleveland, O. "Rubberrite."
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Red Cross—See National Rubber & Specialties Co.
 Red Seal Rubber & Cement Co., Passaic, N. J. (See page 233.)
 Red X—See St. Louis Rubber Cement Co.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rie-Nie—See Durkee-Atwood Co.
 Rubber-Weld Co., 781 Tremont St., Boston, Mass. (See page 621.)
 Rubbertite—See Polson Rubber Co.
 S-V—See Williams Mfg. Co.
 St. Louis Rubber Cement Co., 3046 Lombdin Ave., St. Louis, Mo. "P. P. & B." "Red X"
 Seal-Fast—See Bowes Co.
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Lok-Seal."
 Stickfast—See American Rubber & Tire Co.
 Superfix Rubber Co., Akron, O.
 Sure-Hold—See Farr's Sure-Hold Tire Cement Co.
 Swanson Supply Co., 2124 Westlake Ave., Seattle, Wash.
 Tiger—See Eclipse Cement & Blacking Co.
 Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J. "C. O. T."
 Tire-Doh—See Atlas Auto Supply Co.
 Titan—See Goodrich Co.
 United States Tire Co., 1790 Broadway, New York, N. Y. "Heal-A-Cut."
 (See page 503.)
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Vitalo—See Continental Rubber Works.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

Williams Mfg. Co., 1800 Carman St., Camden, N. J. "S-V."
 Wonder Worker—See Hall-Thompson Co.
 Xylo—See Dealers Motor Supply Corp.

CEMENT, Top Repair

Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

CEMENT, VULCANIZING—See Cement, Tire Repair

CENTER GAGES—See Gages, Center

CENTER PUNCHES—See Punches, Center Prick and Drift

CENTERING DRILLS—See Drills, Centering

CENTRIFUGAL CLARIFIERS—See Clarifiers

CENTRIFUGAL OIL PURIFIERS—See Purifiers, Oil

CENTRIFUGALS, CLARIFYING AND FILTERING—See Separators, Oil

CHAIN APPLIERS—See Tools, Tire Chain Attaching

CHAIN BLOCKS—See Blocks or Hoists, Chain

CHAIN, DRIVING—See Chain, Transmission

CHAIN FASTENERS—See Fasteners, Tire Chain

CHAIN HOISTS—See Blocks or Hoists, Chain

CHAIN LOCKS—See Locks, Tire Chain

CHAIN LUBRICANT—See Graphite; also Greases.

CHAIN REPAIR LINKS—See Links, Tire Chain Repair

CHAIN REPAIR TOOLS—See Tools, Chain Repair; also Tools, Tire Chain Repair

CHAIN, SILENT—See Chain, Transmission

CHAIN SPRINGS — See Tighteners, Tire Chain

CHAIN TIGHTENERS — See Tighteners, Tire Chain

CHAIN TOOLS—See Tools, Chain Repair; also Tools, Tire Chain Attaching; also Tools, Tire Chain Repair

Everything is listed under the NOUN or principal word

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HIGH EFFICIENCY
ROLLER AND SILENT TYPE
CHAINS

also *Low* Cost per *Thousand Miles* of Service



LATEST ROLLER CHAINS HAVE SPECIAL QUALITY
SOLID ROLLS AND OTHER IMPORTANT IMPROVEMENTS

Front End Motor Chain Drives



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AND NEVER KNOWN
TO SKIP THE
SPROCKET TEETH**

THE WHITNEY MFG. CO.
HARTFORD, CONNECTICUT, U. S. A.

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CHAIN, Transmission or Driving*(Including Block, Roller and Silent Chain)*

- American High Speed Chain Co., Indianapolis, Ind.
 Baldwin Chain & Mfg. Co., 199 Chandler St., Worcester, Mass.
 Brampton—See Miller, Chas. E.
 Coventry—See Funke Co.
 Diamond Chain & Mfg. Co., Kentucky Ave., W., Indianapolis, Ind.
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. "Renold." (Importers.) (See page 819.)
 Funke Co., Herbert F. L., 118 Broad St., New York, N. Y. "Coventry."
 Link-Belt Co., Indianapolis, Ind. (See page 283.)
 Miller Chas. E., 281 W. 54th St., New York, N. Y. (Importer.) "Brampton."
 Morse Chain Co., Ithaca, N. Y. (See page 229.)
 Renold—See Frasse & Co.
 Whitney Mfg. Co., Hartford, Conn. (See page 227.)

CHAIN WASHING MACHINES, TIRE—See Machines, Tire Chain Washing**CHAINS or GRIPS, Non-Skid***(For other Anti-Skid Devices—See Bands, Non-Skid; also Buses, Buses; also Tracks Detachable)*

- Ace Chain Corp., 235 W. 58th St., New York, N. Y. (See page 355.)
 Acorn Motor Equipment Corp., 44 Penn St., Brooklyn, N. Y. "Hadco." (See page 121.)
 American Chain Co., Bridgeport, Conn. "Rido-Skid," "Weed." (See page 329.)
 Anti-Skid Auto Shoe Co., 1723 Third Ave., Moline, Ill.
 Arrow-Grip Mfg. Co., Glens Falls, N. Y.
 Auto Tire Boot Co., 1210 Webster Ave., Chicago, Ill.
 Automotive Equipment Co., Parson & Walbridge Sts., Kalamazoo, Mich. "Master Grip."
 Bantlin Co., Julius J., Cincinnati, O.
 Bear—See Iverson-Conway Co.
 Bear Mfg. Co., Rock Island, Ill. "Q-D." (See page 405.)
 Bersted Mfg. Co., 765 Mather St., Chicago, Ill.
 Boulevard Holding Co., Minneapolis, Minn. (Sole Distributors for Union Chain Co., Minneapolis, Minn.)
 Bradley—See Truck Parts & Foundry Co.
 Campbell, George J., 1207 Vine St., Philadelphia, Pa.
 Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill. "Union."
 Clamert Mfg. Co., 237 Jefferson St., Latrobe, Pa.
 Cleveland Chain & Mfg. Co., Cleveland, O. "Trax-Yun."
 Daubenspeck Chain Co., Brady & Monroe Sts., Butler, Pa. "Dubl-Bilt," "Minute Grabs."
 Dow & Cole, 1173 Elm St., Manchester, N. H. "Spider."
 Dubl-Bilt—See Daubenspeck Chain Co.
 Easyon—See Woodworth Mfg. Co.
 Easyroll—See Will-Burt Co.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Emergency—See Gemco Mfg. Co.
 Emergency Anti-Skid Chain Co., Sterling, Ill.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. (See pages 569 to 574.)
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Emergency." (See page 167.)
 Giant Grip Mfg. Co., Oshkosh, Wis. (See page 225.)
 Gibney Mfg. Co., Minneapolis, Minn. "Master."
 Goodhue, John, Laconia, N. H.
 Grus Leaf Spring Oiler Co., 4504 W. Harrison St., Chicago, Ill.
 Hadco—See Acorn Motor Equipment Corp.
 Highway—See Owen & Graham Co.
 Hodges Chain Co., Galesburg, Mich. "No-Stuck."
 Holmes—See Saltzman Co.
 Imperial Bit & Snap Co., Racine, Wis. "Reichert." (See page 225.)
 Iverson-Conway Co., 160 N. Wells St., Chicago, Ill. "Bear."
 Jiff-On—See Midland Co.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Distributors east of the Mississippi River for Standley Adjusters.) (See page 138B.)
 K-L—See Kingsbury-Leahy Co.
 Kalamazoo Chain Co., Kalamazoo, Mich. "No-Stuck."
 Kant-Skid—See Woodworth Mfg. Co.
 Kiff-On—See Scharow Mfg. Co.
 Kimball Tire Case Co., 163 Broadway, Council Bluffs, Ia.
 Kingsbury-Leahy Co., 135 Hudson Ave., Albany, N. Y. "K-L."
 Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.
 Loktite—See Staples & Seefeld.
 Lutz Co., Morris, Bamberg & Moore Sts., Philadelphia, Pa.
 Master—See Gibney Mfg. Co.
 Master-Grip—See Automotive Equipment Co.
 Metal Stamping Co., Long Island City, N. Y. (See page 168.)
 Midland Co., South Milwaukee, Wis. "Jiff-On."
 Minute Grabs—See Daubenspeck Chain Co.
 Mundorf, Wm. C., 1401 First Ave., York, Pa.
 Naceakid Service Chain Co., Third & Schenck Sts., Trenton, N. J.
 Never-Skid Mfg. Co., 120 Broadway, New York, N. Y.
 Newhall Chain Forge & Iron Co., 90 West St., New York, N. Y.
 No-Stuck—See Hodges Chain Co.
 Non Skid Co. of America, 9 Norwich St., Worcester, Mass.
 Owen & Graham Co., 2843 E. Grand Blvd., Detroit, Mich. "Highway."
 Parker-Morse Co., 315 W. 15th St., Cincinnati, O.
 Phelps Co., W. H., 1131 Elm St., Springfield, Mass.
 Prest-O-Grip—See Rowe Calk & Chain Co.
 Q-D—See Bear Mfg. Co.
 Reichert—See Imperial Bit & Snap Co.
 Reliable Unit Clamp Chain Co., 625 Wabasha St., St. Paul, Minn.
 Rido-Skid—See American Chain Co.
 Rixie Mfg. Co., 339 S. Pierce St., Milwaukee, Wis.
 Rowe Calk & Chain Co., Plantsville, Conn. "Prest-O-Grip."
 Sala Co., Canton, O.
 Saltzman Co., DeWitt G., 265-67 Park St., New Haven, Conn. "Holmes."
 Scharow Mfg. Co. (So. Milwaukee) Milwaukee, Wis. "Kiff-On."
 Schmidt Co., Charles D., 276 Canal St., New York, N. Y.

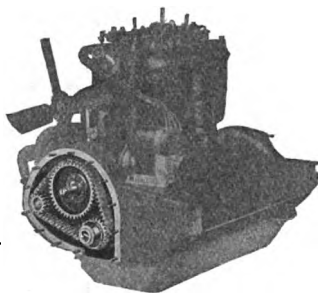
Everything is listed under the NOUN or principal word

*The Sign of
Efficiency*

*The Sign of
Durability*

MORSE

DRIVES



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Gears*

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a Belt*

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It is not hard to understand why the MORSE Silent Front End Chain Drive has become known all over the world as the superior long life, accurate chain.

The reason is simple: the ability of this chain to remain at its best for long periods without the need of expert attention.

The users of Front End Accessory Drives have learned that this unusual quality means faithful, efficient service from the Car or Truck.

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There is a MORSE CHAIN DRIVE Remedy

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CHAINS or GRIPS, Non-Skid (Continued)

Spider—See Dow & Cola.
 Standley Skid Chain Co., Boone, Ia.
 (See page 138B.)
 Standard Non-Skid Grip Co., 293 Halsey St., Newark, N. J.
 Staples & Seefeld, M. & M. Bank Bldg., Milwaukee, Wis. "Loktite."
 Stice—See Tama Non-Skid Co.
 Stubbs & Co., C. C., 304 Fowler St., Waterloo, Iowa.
 Tama Non-Skid Co., Tama, Ia. "Stice."
 Trax-Yun—See Cleveland Chain & Mfg. Co.
 Truck Parts & Foundry Co., Alma, Mich. "Bradley."
 Union—See Channon Mfg. Co.
 Union Chain Co.—See Boulevard Holding Co.
 United States Chain & Forging Co., Pittsburgh, Pa. (See page 231.)
 Universal Chain Co., 647 Main St., Hartford, Conn.

Uptou Co., Curwensville, Pa.
 Weed—See American Chain Co.
 Will-Burt Co., Orrville, O. "Easyroll."
 Woodworth Mfg. Co., 1-29 Starr Ave.,inghamton, N. Y. "Easyon," "Kant-Skid."

CHAINS, TIRE—See Chains, Non-Skid

CHAINS, TOW—See Ropes or Chains, Tow

CHAIRS, FOLDING—See Seats, Supplementary

CHAMFERING MACHINES—See Machines, Gear Tooth Chamfering

CHAMOIS—See Sponges and Chamois

CHANGERS, TIRE—See Machines, Tire Removing and Replacing

CHANNEL STEEL—See Steel, Angle

CHANNELS, PRESSED STEEL — See Frames, Pressed Steel

CHARGERS, BATTERY — See Magnetos and Dynamos; also Generators, Battery Charging; also Rectifiers, Alternating Current; also Rheostats, Charging; also Systems, Electric Lighting

CHARGERS, Magneto Magnet

(For remagnetizing magneto magnets)

Auto Electrical Maintenance Co., 943 Chestnut Ave., Cleveland, O. "La Fer."
 Cowie Electric Co., E. S., Kansas City, Mo. (See page 481.)
 Durham Co., P. J., 244 W. 49th St., New York, N. Y.
 Ecco—See Electric Equipment Co.
 Electric Equipment Co., 1240 S. Hope St., Los Angeles, Cal. "Ecco."
 Electric Power Maintenance Co., 1101-09 Monroe St., Toledo, O.
 Esterline-Angus Co., 227 E. South St., Indianapolis, Ind.
 F. F.—See France Mfg. Co.
 Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo. (See page 725.)
 France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F. F."

Gund Mfg. Co., La Crosse, Wis.
 La Fer—See Auto Electrical Maintenance Co.
 Mohawk Electric Mfg. Co., 16 Kirk Pl., Newark, N. J.
 Morgan, C. W., 1386 Michigan Ave., Chicago, Ill.
 Peco—See Phillips & Co.
 Phillips & Co., H. M., Union City, Ind. "Peco."
 Quality Electric Products Co., 907 E. 15th St., Kansas City, Mo. (See page 481.)
 R. & N.—See Randall & Noll.
 Randall & Noll, 317 S. 11th St., Lincoln, Neb. "R. & N."
 Stahl Rectifier Co., 1401 W. Jackson Blvd., Chicago, Ill.
 Teco—See Titan Engineering Co.
 Titan Engineering Co., 603 W. Pearl St., Union City, Ind. "Teco."
 Valley Electric Co., 4919 Connecticut Ave., St. Louis, Mo.

CHARGERS, Magneto Magnet, for Fords

(For remagnetizing magneto magnets)

Auto Electrical Maintenance Co., 943 Chestnut Ave., Cleveland, O. "La Fer."
 Benjamin Electric Mfg. Co., Chicago, Ill. (See pages 177 and 809.)
 Berkshire Magneto Co., 70 West St., Pittsfield, Mass.
 Electro Rectifier Co., 739 Polk St., San Francisco, Cal.
 F. F.—See France Mfg. Co.
 Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo. (See page 725.)
 France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F. F."
 La Fer—See Auto Electrical Maintenance Co.
 Lectro Mfg. & Sales Co., 1343 N. Clark St., Chicago, Ill.
 Midway Mechanical Co., St. Paul, Minn.
 Mohawk Electric Mfg. Co., 16 Kirk Pl., Newark, N. J.
 Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. (See page 325.)
 Vim Unit Remagnetizer, 6 Smith St., Paterson, N. J.

CHARGERS, STORAGE BATTERY FOR FORDS—See Rectifiers, Alternating Current

CHARGING APPARATUS — See Generators; also Ammeters; also Panels; also Plugs; also Rectifiers; also Rheostats

CHARGING CONNECTORS, STORAGE BATTERY — See Connectors, Storage Battery Charging

CHARTS, Electric Wiring

Ambu—See American Bureau of Engineering
 American Bureau of Engineering, 16 S. Michigan Ave., Chicago, Ill. "Ambu" (See page 147.)
 Automobile Engineering Co., 14 W. Washington St., Chicago, Ill.
 Automotive Publishing Co., 442 S. Dearborn St., Chicago, Ill.
 Michigan State Auto School, 3729 Woodward Ave., Detroit, Mich. (See page 181.)

CHASSIS ADAPTERS — See Converter Chassis

Everything is listed under the NOUN or principal word

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CHASSIS CONVERTERS—See Converters, Chassis

CHASSIS LUBRICATING SYSTEMS—See Systems, Chassis Lubricating

CHAUFFEUR'S TELEPHONES—See Telephones, Limousine

CHECK VALVES—See Valves, Angle; also Valves, Ball Check; also Valves, Engine

CHECKS, Brass, Time, Tool and Pay

Matthews & Co., Jas. H., 1537 Forbes Field, Pittsburgh, Pa.

Mulhaupt, F. Jos., 227 N. Fifth St., Lafayette, Ind.

Murdock Co., W. James., 116 Opera Pl., Cincinnati, O.

Noble & Westbrook Mfg. Co., 9 Asylum St., Hartford, Conn.

Pannier Bros. Stamp Co., 207-09 Sandusky St., Pittsburgh, Pa. (See page 813.)

Superior Seal & Stamp Co., 151 E. Jefferson Ave., Detroit, Mich. (See page 813.)

CHECKS, Clutch

Schooler Co., O. E., Webb City, Mo.

CHECKS, PAY—See Checks, Brass, Time

CHECKS, Steering Gear

(Spring or friction attachments for steering gear to eliminate side sway and reduce the shock transmitted to the steering wheel by the road wheels)

Balcrank—See Cincinnati Ball Crank Co. Cincinnati Ball Crank Co., Cincinnati, O. "Balcrank." (See page 498.)

Cooper Auto Supply Co., N. Broad St., Thomasville, Ga.

Dennis Shock Absorber Co., 304 W. 63rd St., Chicago, Ill. (See page 775.)

F. M. F.—See International Sav-A-Life Fender Co.

Houseman, Wm. H., Chatham, N. Y. "Little Steersman."

International Sav-A-Life Fender Co., Guardian Bldg., Cleveland, O. "F. M. F."

Little Steersman—See Houseman, Wm. H.

CHECKS, Steering Gear, for Fords

(Spring or friction attachments for steering gear to eliminate side sway and reduce the shock transmitted to the steering wheel by the road wheels)

Accesso Mfg. Co., 99 State St., Boston, Mass. (Sole Distributors for D. & O. Co., Boston, Mass.)

A. S. B.—See Burnell Engineering Co. American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Litt Sho Fur."

Anderson—See Motor Device Co.

Badger—See Safety Appliance Co.

Bailey Co., W. J., 401 Mulberry St., Newark, N. J.

Bayne Mfg. Co., Bushnell, Ill. "Pilot." (See page 149.)

Burnell Engineering Co., 536 E. Water St., Milwaukee, Wis. "A. S. B."

Casco Mfg. Co., Jackson St., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)

Comfort Motor Machine Co., 715 Galapago St., Denver, Colo.

Cooper Auto Supply Co.—See Casco Mfg. Co.

Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)

D. & O. Co.—See Accesso Mfg. Co.

Danvers Specialty Co., Danvers, Ill.

Dennis Shock Absorber Co., 304 W. 63rd St., Chicago, Ill. (See page 775.)

Drive-Rite—See Economy Gas Lamp Co.

Eclipse Mfg. Co., 424 N. Meridian St., Indianapolis, Ind. (Sole Distributors for A. C. Savidge Co., Indianapolis, Ind.)

Economy Gas Lamp Co., 215-17 Goodrich Pl., Kansas City, Mo. "Drive-Rite."

Handee—See Racine Handy Mfg. Co.

Hanten Machine Co., Watertown, S. Dak.

Harrington Co., O. C., 4138 Fillmore St., Chicago, Ill.

Hastings Mfg. Co., 36 E. Mini St., Hastings, Mich. (See page 521.)

Houseman, Wm. H., Chatham, N. Y. "Little Steersman."

Ideal Mfg. Co., 14th & Harrison Sts., North Kansas City, Mo.

International Automobile Accessory Co., Bible House, New York, N. Y.

Jackels & Campbell Co., 1622 McGee St., Kansas City, Mo.

Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.

K-L-K—See Kickhafer Mfg. Co.

Kantlock—See Servis Specialty Mfg. Co.

Kickhafer Mfg. Co., Dept. A., 259-71 Reed St., Milwaukee, Wis. "K-L-K." (See page 807.)

L-A—See Lockwood-Ash Motor Co.

Lansfield Mfg. Co., 510 First Ave., West Haven, Conn. "Steady Steersman."

Litt Sho Fur—See American Automobile Accessories Co.

Little Steersman—See Houseman, Wm. H.

Lockwood-Ash Motor Co., Jackson, Mich. "L-A." (See page 655.)

Marvel Auto Specialties Corp., 149-51 Oak St., Buffalo, N. Y.

Meixell Co., Ohio & Meridian Sts., Indianapolis, Ind. "Overland."

Miller & Co., Spring Valley, Ill.

Modern Auto Appliance Co., Chatham, N. Y. "Little Steersman."

Motor Device Co., Anderson, Ind. "Anderson."

Overland—See Meixell Co.

Philadelphia Auto Safety Steering Device Co., 1622 Arch St., Philadelphia, Pa.

Pilot—See Bayne Mfg. Co.

Protecto—See Robinson Motor Truck Co.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Robinson Motor Truck Co., 1307 Western Ave., Minneapolis, Minn. "Protecto."

Rounds & Co., C. C., Downs, Ia.

Safety Appliance Co., 515-17 Broadway, Baraboo, Wis. "Badger."

Savidge Co.—See Eclipse Mfg. Co.

Saxton Auto-Accessory Co., 28 W. 33rd St., New York, N. Y.

Servis Specialty Mfg. Co., 627 Clara Ave., St. Louis, Mo. "Kantlock."

Sieverkrapp Engine Co., De Koven & N. W. Tracks, Racine, Wis. "Steer-Adius."

Simplicity Mfg. Co., 1931 E. 97th St., Cleveland, O.

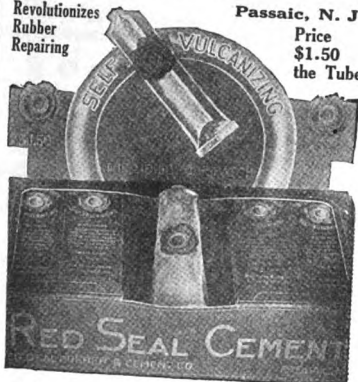
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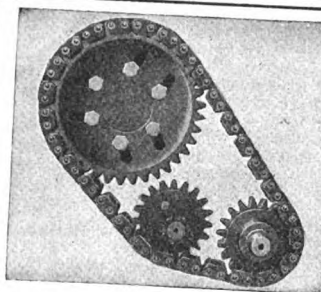
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Standard Motor Products Mfg. Corp., 908 W. Chicago Ave., Chicago, Ill. "Stear Safe."
Steady Steersman—See Lansfield Mfg. Co.
Stear-Safe—See Standard Motor Products Mfg. Co.
Steer-Adius—See Sieverkrapp Engine Co.
Steer Relief—See Strong Metal Products Co.
Strong Metal Products Co., H. M., 1011-51 Power Ave., N. E., Cleveland, O. "Steer Relief."
Twin-Rim Co., Everett, Mass.
Universal Products Co., 908 W. Chicago Ave., Chicago, Ill. "Stear-Safe."
White-Knight Corp., Milroy, Ind.

CHECKS, TIME—See Checks, Brass Time

CHECKS, TOOL—See Checks, Brass Time

CHEMICAL FIRE TANKS—See Tanks, Chemical Fire

CHEMICAL PLATING COMPOUNDS—See Compounds, Chemical Plating

CHEMICALS, RUST PREVENTING—See Compounds, Rust Preventing and Removing

CHIMES, EXHAUST—See Horns, Exhaust

CHISELS, CAPE—See Chisels, Cold and Cape

CHISELS, Cold and Cape

Atha Tool Co., Chapel St., Newark, N. J.
Beall Bros., Fourth St., Alton, Ill.
Bicknell Mfg. & Supply Co., 22 N. Academy St., Janesville, Wis.
Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
Braunsdorf-Mueller Co., 306 Madison St., Elizabeth, N. J.
Buck Bros., Milbury, Mass.
Buffman Tool Co., Louisiana, Mo.
(See page 883.)
Carver Tool Works, Spring Valley, N. Y.
Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."
Cushman Co., Inc., Champaign, Ill.
(See page 887.)
Drew & Co., C., Kingston, Mass.
Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.
Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.
Harrold Tool & Forge Co.—See Wiebusch & Hilger.
Hargrave—See Cincinnati Tool Co.
Hubbard & Co., 63d St. & A. V. R. R., Pittsburgh, Pa.
K. & B.—See Kilborn & Bishop Co.
Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn. "Silex," "K. & B."
Klein-Logan Co., S. 13th & Breed Sts., Pittsburgh, Pa.
Kortick Mfg. Co., 345 First St., San Francisco, Cal.
Kraemer & Co., Newark, N. J.
(See page 643.)
Lowentraut Mfg. Co., P., 36-54 Brenner St., Newark, N. J.
Marcy Tool Works, Putnam, Conn.
Maximus—See Taunton Tool Co.

Mayhew Steel Products Co., 291 Broadway, New York, N. Y.
Milwaukee Tool & Forge Co., 226 Becher St., Milwaukee, Wis.
Mound Tool Co., Dept. D., Seventh & Hickory Sts., St. Louis, Mo.
(See page 887.)
Ohio Tool Co., Charleston, W. Va.
Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Pexto—See Peck, Stow & Wilcox Co.
Red Head—See S. & I. Co.
S. & I. Co., 55-57 Governor St., Springfield, Mass. "Red Head."
Sharpeness—See Smith & Co.
Silex—See Kilborn & Bishop Co.
Smith & Co., H. D., Plantville, Conn. "Sharpeness."
Smith & Hemenway, 120 Colt St., Irvington, N. J.
Snell Mfg. Co., Fiskdale, Mass.
Storts & Son, John, 210-12 Vine St., Philadelphia, Pa.
Syracuse Twist Drill Co., 926 Grape St., Syracuse, N. Y.
Taunton Tool Co., 49 Adams St., Taunton, Mass. "Maximus."
Thomson Drop Forge Co., W. Main St., Plantville, Conn.
Tuck Mfg. Co., 74 Ames St., Brockton, Mass.
V. & B.—See Vaughan & Bushnell Mfg. Co.
Vaughan & Bushnell Mfg. Co., 3114-38 Carroll Ave., Chicago, Ill. "V. & B."
Verona Tool Works, Oliver Bldg., Pittsburgh, Pa.
Vlichek Tool Co., 2000 E. 87th St., Cleveland, O.
Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harold Tool & Forge Co., Columbiana, O.)

CHOCKS, Blocks and Clamps, Car Shipping

Carbo Steel Products Co., 2600 W. 111th St. (Morgan Park), Chicago, Ill.
Rohe Traction Block Co., First Ave. N. & Third St., Kenmare, N. D.

CHROME NICKEL STEEL—See Steel, Chrome Nickel

CHROME, STEEL—See Steel, Chrome

CHUCKING GRINDERS—See Grinders, Chucking

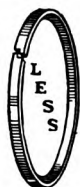
CHUCKS, Boring Mill

Gisholt Machine Co., 1215 E. Washington Ave., Madison, Wis.
Meyers Co., W. F., 13th & J Sts., Bedford, Ind.
Union Mfg. Co., 296 Church St., New Britain, Conn.

CHUCKS, Drill

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.
Cushman Chuck Co., 806 Windsor St., Hartford, Conn.
Detroit Twist Drill Co., Detroit, Mich. "Graham." (See page 351.)
Eastern Tube & Tool Co., 594 Johnson Ave., Brooklyn, N. Y. "Etico."

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The Ringless Piston

The Ringless Piston, Tismer Patent, marks a new epoch in automotive engineering.

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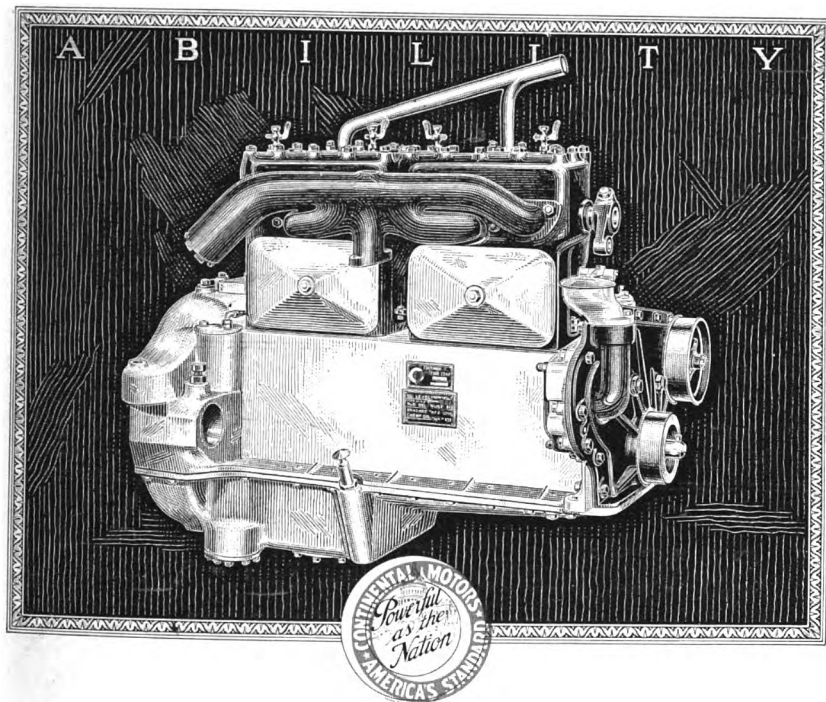
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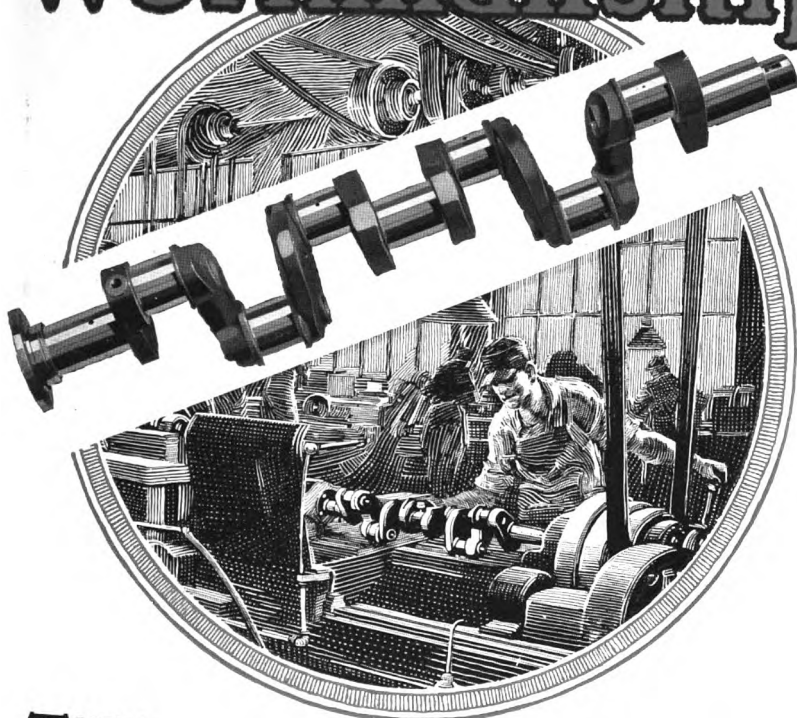
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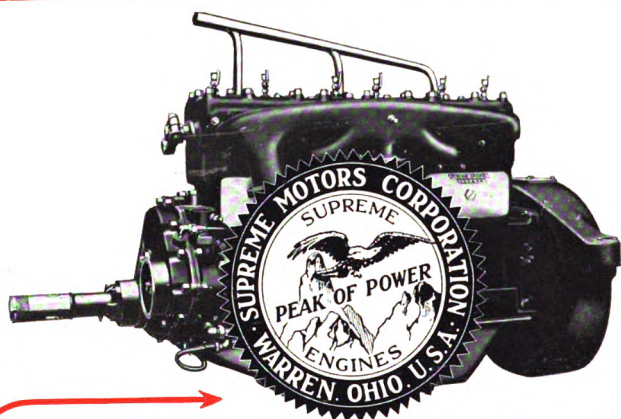
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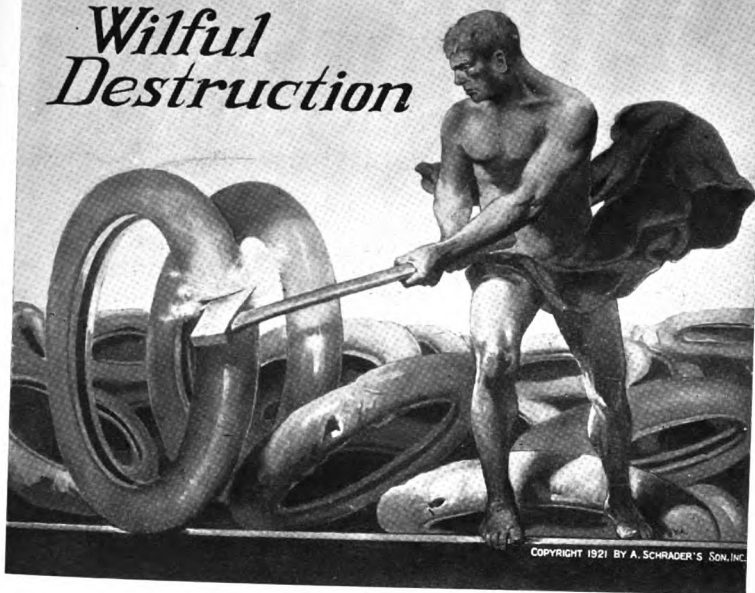
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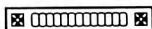
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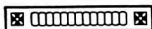
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CHUCKS, Drill (Continued)

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 Graham—See Detroit Twist Drill Co.
 Horton & Son Co., E., Windsor Locks, Conn.
 "Morrow."
 Jacobs Mfg. Co., 984 Park Ave., Hartford, Conn.
 Little Giant—See Westcott Chuck Co.
 McCrosky Tool Corp., Meadville, Pa. "Wizard."
 Magic—See Modern Tool Co.
 Marvin & Casler Co., 118 Roberts St., Canastota, N. Y.
 Millers Falls Co., Millers Falls, Mass. "Star."
 Modern Tool Co., State & Second Sts., Erie, Pa. "Magic."
 Morrow—See Horton & Son Co.
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 National—See Oneida National Chuck Co.
 Oneida National Chuck Co., Cedar St., Oneida, N. Y. "National."
 Pratt Chuck Co., Frankfort, N. Y. "Pratt-Oneida."
 Pratt-Oneida—See Pratt Chuck Co.
 Presto—See Whitney Mfg. Co.
 Skinner Chuck Co., 344 Church St., New Britain, Conn.
 Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
 Star—See Millers Falls Co.
 Trump Bros. Machine Co., Beach & Anchorage Sts., Wilmington, Del.
 Union Mfg. Co., 296 Church St., New Britain, Conn.
 Wahlstrom Tool Co., 5520 Second Ave., Brooklyn, N. Y.
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 661.)
 Westcott Chuck Co., E. Walnut St., Oneida, N. Y. "Little Giant."
 Whitney Mfg. Co., Hartford, Conn. (See page 227.)
 Whiton Machine Co., D. E., 190 Howard St., New London, Conn.
 Wizard—See McCrosky Tool Co.

CHUCKS, Lathe

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.
 American Tool & Machine Co., 10 High St., Boston, Mass.
 Barker—See Thomas Elevator Co.
 Cushman Chuck Co., 306 Windsor St., Hartford, Conn.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Hoggson & Pettis Mfg. Co., 141 Brewery St., New Haven, Conn. "Sweetland."
 Horton & Son Co., E., Windsor Locks, Conn.
 Millers Falls Co., Millers Falls, Mass. "Star."
 National—See Oneida National Chuck Co.
 Oneida National Chuck Co., Cedar St., Oneida, N. Y. "National."
 Pratt Chuck Co., Frankfort, N. Y. "Pratt-Oneida."
 Pratt-Oneida—See Pratt Chuck Co.
 Skinner Chuck Co., 344 Church St., New Britain, Conn.
 Star—See Millers Falls Co.
 Sweetland—See Hoggson & Pettis Mfg. Co.
 Thomas Elevator Co., 30 S. Hoyne Ave., Chicago, Ill. "Barker."

Trump Bros. Machine Co., Beach & Anchorage Sts., Wilmington, Del.
 Union Mfg. Co., 296 Church St., New Britain, Conn.
 Westcott Chuck Co., E. Walnut St., Oneida, N. Y.
 Whiton Machine Co., D. E., 190 Howard St., New London, Conn.

CHUCKS, Magnetic

D. & W. Fuse Co. (Elmwood Sta.), Providence, R. I.
 Heald Machine Co., Worcester, Mass. (See page 441.)
 Kar Engineering Co., 79 E. 130th St., New York, N. Y.
 Simmons—See Taft-Pierce Mfg. Co.
 Taft-Pierce Mfg. Co., Woonsocket, R. I. "Simmons."
 Walker Co., O. S., Rockdale St., Worcester, Mass.

CHUCKS, Planer

Skinner Chuck Co., 344 Church St., New Britain, Conn.
 Union Mfg. Co., 296 Church St., New Britain, Conn.

CHUCKS, Pneumatic

M. E. C.—See Manufacturers Equipment Co.
 Manufacturers Equipment Co., Waller Ave. & Fillmore St., Chicago, Ill. "M. E. C."

CIGAR ASH RECEIVERS—See Receptacles, Ash

CIGAR LIGHTERS—See Lighters, Electric, Cigar

CIRCLE CUTTERS—See Cutters, Washer or Gasket

CIRCUIT TESTING INSTRUMENTS—See Instruments, Electrical Circuit Testing

CIRCULAR GLASS CUTTERS—See Cutters, Circular Glass

CIRCULATING PUMPS—See Pumps, Water

CIRCULATION GAGES—See Gages, Water Circulation

CIRCULATION REGULATORS—See Regulators, Water Circulating

CLAMPS, BODY BUILDERS—See Clamps, Woodworkers

CLAMPS, BOW—See Holders, Top

CLAMPS, BOW, FOR FORDS—See Clamps, Top Bow

CLAMPS, CAR SHIPPING—See Chocks, Car Shipping

CLAMPS, DRIVE SHAFT TUBE REPAIR FOR FORDS—See Braces, Drive Shaft Housing

Everything is listed under the NOUN or principal word

CLAMPS OR FASTENERS, HOOD—See Fasteners, Hood

CLAMPS or Fasteners, Hood, for Fords

(For fastening down hoods—See also Anti-Batters, Hood)

- American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Giant."
Columbus Auto Parts Co., 215 E. Russell St., Columbus, O.
Davey—See Holton Hood Clip Co.
Giant—See American Auto Products Co.
Holton Hood Clip Co., 513 Shelby St., Detroit, Mich. "Davey."
Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 929.)
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

CLAMPS, Hose

(For Radiator Hoses or Tire Pump Tubing)

- Aeme Motor Parts Corp., 355 E. Water St., Milwaukee, Wis.
Aco—See Asch and Co., Inc.
Allen Mfg. Co., W. D., 566 W. Lake St., Chicago, Ill.
American Brass Products Co., Pottstown, Pa.
American Cushion Spring Co., Kalamazoo, Mich.
American Stamping Co., 31 Burchard St., Battle Creek, Mich.
Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. "Aco." (See page 247.)
Bartlett Mfg. Co., 428 E. Lafayette Ave., Detroit, Mich. "Bellamy."
Bellamy—See Bartlett Mfg. Co.
Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass.
Brown Stamping Co., Toledo, O.
Bull Dog—See Oliver Metal Stamping Co.
Carson Bros. Mfg. Corp., 15-19 Perry St., Buffalo, N. Y. "Griptite."
Catelain Andrae, 1446-48 Indiana Ave., Chicago, Ill.
Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.
Cooper Clamp Co., 737 Park Ave., Brooklyn, N. Y. "Presto."
Crabill Hose Clamp Co., 310 Hamlin St., Battle Creek, Mich.
D'Arcy Spring Co., Kalamazoo, Mich.
Davey—See Davidson, F. J.
Davidson, F. J., 9688 Prairie Ave., Detroit, Mich. "Davey."
Esco—See Stevens & Co.
Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Ideal clamps.) (See page 429.)
Federal Tin Co., 11 E. Barre St., Baltimore, Md.
Flexo—See McChesney & Co.
Flexo-Adjusto—See McChesney & Co.
Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
Griptite—See Carson Bros. Mfg. Corp.
Harrisburg Stamping Co., 61 Cumberland St., Harrisburg, Pa. "Lightning."
Herz, 182 Locust Ave., New York, N. Y. "Lasso." (See page 682.)

- Higgins Machine Works, 25 Keystone St., Buffalo, N. Y.
Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 247.)
Kennedy & Sons Revolving Hose Coupling Co., 2931 Fulton St., Chicago, Ill.
Kongislow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
Lasso—See Herz.
Lightning—See Harrisburg Stamping Co.
McChesney & Co., J. S., 145 W. Ohio St., Chicago, Ill. "Flexo," "Flexo-Adjusto."
Metal Stamping Co., Long Island City, N. Y. (See page 168.)
Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
Newark Stamping & Foundry Co., Newark, O. "Thompson."
Noc-Out—See Vitek Mfg. Co.
Oliver Metal Stamping Co., 217-23 W. Illinois St., Chicago, Ill. "Bull Dog."
On Quick—See Pennsylvania Stamping Co.
Otis-Flagg Corp., 518 W. Market St., York, Pa. "Uneek."
Pennsylvania Stamping Co., York, Pa. "On Quick."
Presto—See Cooper Clamp Co.
Schrader's Son, A., Brooklyn, N. Y. (See page 241.)
Scott—See White-Knight Corp.
Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 863.)
Stevens & Co., 375 Broadway, New York, N. Y. "Esco." (See page 197.)
Thompson—See Newark Stamping & Foundry Co.
Uneek—See Otis-Flagg Corp.
United Steel & Wire Co., 27 Fonda Ave., Battle Creek, Mich.
Universal Industrial Corp., Hackensack, N. J. (See page 247.)
Vitek Mfg. Co., Chicago, Ill. "Noc-Out."
White-Knight Corp., Milroy, Ind. "Scott."
Yerdon, Wm., Main & Center Sts., Fort Plain, N. Y.

CLAMPS, Machinists

- Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 885.)
Athol Machine Co., Athol, Mass.
Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
C. A. D.—See Standard Shop Equipment Co.
Cincinnati Tool Co., Main Ave., Norwood O. "Hargrave."
Goodell-Pratt Co., Greenfield, Mass.
Hargrave—See Cincinnati Tool Co.
Le Count, Wm. G., Merritt St., South Norwalk, Conn.
Mark Mfg. Co., 111 W. Washington St., Chicago, Ill.
Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.
Standard Shop Equipment Co., 23rd & Hunting Park Ave., Philadelphia, Pa. "C. A. D."
Starrett Co., L. S., Athol, Mass.
Taylor Mfg. Co., James L., 103-23 Parker Ave., Poughkeepsie, N. Y.
Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. (See page 963.)

Everything is listed under the NOUN or principal word



HOSE CLAMP

NO NUTS OR BOLTS — LEVER IS OPERATED
BY ONE FINGER
ADJUSTABLE — FOUR CLAMPS COVER ALL SIZES
PUT ON IN A MOMENT

aco products

ASCH AND COMPANY

16-24 W. 61st Street

Incorporated

NEW YORK



Ideal Hose Clamps

Ideal Pump Bands

Ideal Slip Grip Terminals

Ideal Ring Terminals

**Ideal Dry Battery Slip Grip
Connectors**

**Ideal Front License
Brackets**

*Ideal Goods Are Standardized
in Size, Finish, Prices and
Fast Gaining Popularity*

IDEAL CLAMP MFG. CO.

198-202 Bradford St., Brooklyn, N. Y.

UNIVERSAL ADJUSTABLE HOSE CLAMP

"UNIVERSAL SENIOR"
Fits all size hose
from 1" to 3"

"UNIVERSAL JUNIOR"
Fits all sizes
from 1/4" to 1 1/4"



Let your next order be for the "UNIVERSAL" and be convinced of its superiority

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Penna. Building

Dallas, Texas, Harry Knight
Southwest Life Building

STANDARD GAUGE STEEL CO.

BEAVER FALLS, PA.

Manufacturers of

Crankshafts—Machine Keys—Connecting Rods

Please mention The Automobile Trade Directory

CLAMPS, Oxy-Acetylene Welders

Salter Motor Mfg. Co., 1516-18 Oakland Ave.,
Kansas City, Mo.

CLAMPS, PISTON, FOR FORDS—See Vises, Piston**CLAMPS, ROPE—See Clamps, Wire Rope****CLAMPS, Special Cantilever Spring Support**

Covington Garage & Machine Co., Covington,
Pa.

Emco Mfg. Co., Binghamton, N. Y. "Taber."
Taber—See Emco Mfg. Co.

CLAMPS, Spring Repair

(For the temporary repair of broken leaf springs)

Buckeye—See Central Brass & Fixture Co.
Central Brass & Fixture Co., Segler & Hughes
Sta., Springfield, O. "Buckeye."

Gemeo Mfg. Co., 666 S. Pierce St., Mil-
waukee, Wis. (See page 167.)

CLAMPS, Storage Battery Holding Down

Rempes Electric Co., G. H., 12520 Euclid Ave.,
Cleveland, O.

CLAMPS, TOP—See Fasteners, Top**CLAMPS, TOP BOW—See Holders, Top****CLAMPS, Top Bow, for Fords**

(To take the place of the straps to hold down top)

Nelson Mfg. Co., A., 2700 Southport Ave.,
Chicago, Ill.

CLAMPS, Transmission Band Assembling, for Fords

American Auto Products Co., 1819 L St.,
N. W., Washington, D. C. "Jiffy."

Jiffy—See American Auto Products Co.

Lightning—See Ullman Bros.

Ullman Bros., 517 W. 149th St., New York,
N. Y. "Lightning."

CLAMPS, Transmission Drum Repairing for Fords—See Clamps or Vises, Transmission Drum Repairing**CLAMPS, Tube Splicing Mandrel**

Pechstein Iron Works, Ninth & Johnson Sts.,
Keokuk, Ia.

CLAMPS or VISES, Transmission Drum Repairing for Fords

(Bench Clamp or Vise to hold drum when ream-
ing bearing bushing; for Drum Holders for
use with stationary reamer—See
Holders, Transmission Drum
for Fords.)

American—See Service Station Equipment Co.
Dearborn Equipment Co., Kalamazoo,
Mich. (See page 441.)

Lawson, G. D., Pochontas, Ia.

Railway Specialty Co., Atchison, Kans.
"Rysco."

Rysco—See Railway Specialty Co.

Service Station Equipment Co., 37th St. & S.
Ashland Ave., Chicago, Ill. "American."

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.

CLAMPS, Wire Rope

(For Brake Cables)

Hazard Mfg. Co., 81 E. Ross St., Wilkes-Barre,
Pa.

Lans & Sons, Mathew, 2907 Carson St., Pitts-
burgh, Pa.

Roebbing's Sons Co., John A., S. Broad & Canal
Sts., Trenton, N. J.

Trenton Iron Co., Trenton, N. J.

Wilcox, Crittenden & Co., 2 S. Main St., Mid-
dletown, Conn.

CLAMPS, Woodworkers

Batavia Clamp Co., 85 Center St., Batavia,
N. Y. "Colts."

C-S Co—See Chapin-Stephens Co.

Chapin-Stephens Co., Pine Meadow, Conn.
"C-S Co."

Cincinnati Tool Co., Main Ave., Norwood, O.
"Hargrave."

Colts—See Batavia Clamp Co.

Dann Bros. & Co., 84 Franklin St., New
Haven, Conn.

Eagle—See Woodruff & Sons Co.

Grand Rapids Hand Screw Co., 950 N. Front
St., Grand Rapids, Mich.

Hargrave—See Cincinnati Tool Co.

Josef Mfg. Co., E. E., 14 Perry St., Buffalo,
N. Y.

Mark Mfg. Co., 111 W. Washington St., Chi-
cago, Ill.

Mount Carmel—See Woodruff & Sons Co.

National Metal Products Co., 1016 E. 11th
St., Indianapolis, Ind.

National Novelty Corp., New York, N. Y.

O'Neil, Jr., J. H., Pawtucket, R. I.

Ohio Tool Co., Charleston, W. Va.

Oliver Machinery Co., 1025 Clancy St., N. E.,
Grand Rapids, Mich.

Palmer & Sons, Albert E., 212 W. Main St.,
Owosso, Mich.

Peck, Stow & Wilcox Co., Southington, Conn.
"Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Phoenix Hardware Co., 49-53 Illinois St.,
Buffalo, N. Y.

Taylor Mfg. Co., James L., 108-28 Parker Ave.,
Poughkeepsie, N. Y.

Williams & Co., J. H., 38 Richards St.,
Brooklyn, N. Y. (See page 903.)

Woodruff & Sons Co., Walter W., Mount Car-
mel, Conn. "Eagle," "Mount Carmel."

CLARIFIERS, Centrifugal

De Laval Separator Co., 165 Broadway, New
York, N. Y.

CLARIFIERS, OIL—See Separators, Oil**CLEANERS, Acetylene Burner**

Barnard Specialty Co., 3200 Maple Ave., Los
Angeles, Cal.

Nelson Mfg. Co., A., 2700 Southport Ave.,
Chicago, Ill.

Everything is listed under the NOUN or principal word

CLEANERS, Air

(Device to attach to air intake of carburetors to remove sand and dust from the entering air)

- Bennett—See Wilcox-Bennett Carburetor Co.
Donaldson Engineering Co., 693 Raymond St., St. Paul, Minn.
F-S Machine Specialties, 171 Washington St., Newark, N. J. "Martian."
Fagel Motors Co., 107th Ave. & Hollywood Blvd., Oakland, Cal.
Gordon Air Cleaner Co., 1336 Broadway, Kansas City, Mo.
Holley Carburetor Co., Vancouver Ave. & P. M. R. R., Detroit, Mich.
Leonard Air Washer Co., Kalamazoo, Mich.
Martian—See F-S Machine Specialties.
Medway Sales Corp., Baker Bldg., Racine, Wis. "New Racine."
Midwest Engine Co., Indianapolis, Ind. (See page 14.)
National Air Washer Co., Racine Wis.
New Racine—See Medway Sales Corp.
Orem Motor Protector Co., 2327 N. Calvert St., Baltimore, Md.
Parrett—See R-W Co.
Pomona—See Vortex Mfg. Co.
R-W Co., 322 Michigan Ave., Chicago, Ill. "Parrett."
Siphon—See Tractor Appliance Co.
Staynew Filter Co., 396 Platt St., Rochester, N. Y.
Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Siphon."
Twin Ports Steel & Tractor Co., 1713 Broadway, Superior, Wis.
Vortex Mfg. Co., 155 W. Commercial St., Pomona, Cal. "Pomona."
United Manufacturing & Distributing Co., Lake Shore Drive & Ohio St., Chicago, Ill.
Wilcox-Bennett Carburetor Co., 1030 Marshall St., N. E., Minneapolis, Minn. "Bennett."
- CLEANERS, BURNER**—See Cleaners, Acetylene Burner

CLEANERS, Celluloid

- Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "C-E-Z." (See page 267.)
C-E-Z—See Adams & Elting Co.
Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Xylolust."
Em-C-Lac Co., Smith St., Far Rockaway, N. Y.
Xylolust—See Dealers Motor Supply Corp.

CLEANERS, Engine

(For cleaning oil and grease from engines and chassis by a compressed air and gasoline or kerosene spray; for steam engine cleaners—See Boilers, Steam Engine Cleaning)

- Asch and Co., Inc., 10-24 W. 61st St., New York, N. Y. (Eastern Distributors for Wagner Cleaners.) (See page 247.)
Auto-Spray—See National Stamping & Electric Works.
Binks Spray Equipment Co., 3114-26 Carroll Ave., Chicago, Ill.
Bishop & Babcock Co., 1200 E. 55th St., Cleveland, O. "Eureka."
Branford—See Malleable Iron Fittings Co.
C & S—See Codman & Shurtleff.
Cleveland Faucet Co., 705 Frankfort Ave., N. W., Cleveland, O.
Codman & Shurtleff, 120 Boylston St., Boston, Mass. "C & S."

- Daniels Mfg. Co., Atchison, Kans.
Eureka—See Bishop & Babcock Co.
Hansen Mfg. Co., Cleveland, O. (See page 283.)
Lipman Pump Works, 100 Shirland Ave., Beloit, Wis. "Onceover."
Malleable Iron Fittings Co., Branford, Conn. "Branford." (See page 259.)
National Stamping & Electric Works, 424 S. Clinton St., Chicago, Ill. "Auto-Spray."
Onceover—See Lipman Pump Works.
Romort Mfg. Co.—See Zinke Co.
Stewart Mfg. Co., Oakland, Cal. (See page 373.)
Wagner Specialty Co., 250 W. 54th St., New York, N. Y.
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 772 and 773.)

CLEANERS, Fabric

(Compounds for cleaning upholstery or slip covers; for vacuum cleaners—See Cleaners, Vacuum)

- Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
Nacto Cleaner Corp., 2171-73 Madison Ave., New York, N. Y.
Percama—See Perkins-Campbell Co.
Perkins-Campbell Co., Cincinnati, O. "Percama." (See page 299.)
Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y.
Speyer Mfg. Co., 53 Hope St., Brooklyn, N. Y. "Spot Off."
Spot Off—See Speyer Mfg. Co.
Textite—See Woodtite Laboratories.
Woodtite Laboratories, Modesto, Cal. "Textite."

CLEANERS, GENERATOR BRUSH FOR FORDS—See Sanders, Generator Brush**CLEANERS, Glass Wind Shield**

(For cleaning wind shield glass of snow or rain; for chemical cleaners or preventatives—See Compounds, Glass Wind Shield)

- Alcemo Mfg. Co., 20 Bridge St., Newark, N. J. "Klearsight."
American Automatic Devices Co., Chicago, Ill. "Clear Vision." (See page 251.)
American Povar Corp., 536 W. 58th St., New York, N. Y. "Clerzit."
Anti-Dim—See Tecaness Products Co.
Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
Auto Metal Parts Co., 624 E. Locust St., Des Moines, Ia. (See page 775.)
Auto Scope—See White Products Co.
Big B—See Bruening Windshield Co.
Bruening Windshield Co., 1353 Chester Ave., Cleveland, O. "Big B."
Clear-O-Scope Co., Angola, Ind. "Pioneer."
Clearview—See D'Eyraud, Louis.
Clear Vision—See American Automatic Devices Co.
Clerzit—See American Povar Corp.
Crescent—See Trico Products Corp.
Doughty Mfg. Co., 273-79 Lafayette St., New York, N. Y. "Storm King."
D'Eyraud, Louis, 452 W. 16th St., Los Angeles, Cal. "Clearview."
Everclear—See Wessoleck, A. W.

Everything is listed under the NOUN or principal word

CLEANERS, Glass Wind Shield (Continued)

E-Z-Way—See La Vietes Co.
 Folberth Auto Specialty Co., 7914 Lake Ave., Cleveland, O. (See page 253.)
 Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.
 Gray-Hofman Co., 542-548 North Parkside Ave., Chicago, Ill. (See page 265.)
 H. & E. Co., 24 Porter St. (Jamaica Plains), Boston, Mass. "Windmill."
 Handee—See Racine Handy Mfg. Co.
 Hartenstein, R. P., 543 S. Dearborn St., Chicago, Ill. "Utility."
 Hicks Mfg. Corp., 7508-12 Saginaw Ave., Chicago, Ill.
 Holmes, George L., 1776 Broadway, New York. (Eastern Distributors for Jiffy Cleaners.) (See page 179.)
 J. T. Auto Devices Co., 1517 Fairfield Ave., Cleveland, O.
 Jiffy—See La Vietes Mfg. Co.
 Jubilee Mfg. Co., 1829 S. 20th St., Omaha, Neb. "Safety-First."
 K. M. Mfg. Co., Factories Bldg., Toledo, O.
 Kirk-O Mfg. Co., Atlanta, Ga.
 Klearsight—See Alchemo Mfg. Co.
 La Vietes Co., Geo. E., 218 State St., New Haven, Conn. "E-Z-Way." (See page 579.)
 La Vietes Mfg. Co., Station A, New Haven, Conn. "Jiffy." (See page 251.)
 Malco—See Malouf Co.
 Malouf Co., B. I., 146 S. W. Temple St., Salt Lake City, Utah. "Malco."
 Masco—See Mayer Auto Accessories Corp.
 Mayer Auto Accessories Corp., 333 Washington St., Buffalo, N. Y. "Masco."
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. (See page 251.)
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.
 Mosher, J. H., 23 Walnut St., Seneca Falls, N. Y. "Tu-In-One."
 Nagel Electric Co., W. G., Toledo, O. (See page 405.)
 Outlook Co., 5518 Euclid Ave., Cleveland, O.
 Perkins Marine Lamp Corp., 1943 Pitkin Ave., Brooklyn, N. Y. "Perko."
 Perko—See Perkins Marine Lamp Corp.
 Pioneer—See Clear-O-Scope Co.
 Presto-Felt Co., 7 S. Dearborn St., Chicago, Ill.
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Rain-E-Day—See Thomas Mfg. Co.
 Ran-E-Way—See Sunbeam Mfg. Co.
 Safe T—See Stadeker Metal Specialty Co.
 Safety-First—See Jubilee Mfg. Co.
 Seco Mfg. Co., Nasby Bldg., Toledo, O. "Wizard."
 See Safe—See Stadeker Metal Specialty Co.
 Shi-Nup Products Co., 1130 Main St., Racine, Wis.
 Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "See Safe," "Safe T."
 Storm-King—See Doughty Mfg. Co.
 Sunbeam Mfg. Co., Polson Bldg., Seattle, Wash. "Ran-E-Way."
 Teeness Products Co., New York, N. Y. "Anti-Dim."
 Ternstedt Mfg. Co., Detroit, Mich. (See back cover.)
 Thomas Mfg. Co., 1410-12 Dearborn St., Chicago, Ill. "Rain-E-Day."
 Tribune Engineering Co., Front St., Oswego, N. Y.
 Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y. "Crescent."
 Tu-In-O e—See Mosher, J. H.

U. S. A.—See Universal Safety Appliance Corp.
 Universal Safety Appliance Corp., 414 E. Lexington Ave., Baltimore, Md. "U. S. A."
 Utility—See Hartenstein, R. P.
 Wessoleck, A. W., New Britain, Conn. "Everclear." (See page 253.)
 White Products Co., 18 W. 55th St., Chicago, Ill. "Auto Scope." (See page 543.)
 Windmill—See H. & E. Co.
 Wizard—See Seco Mfg. Co.

CLEANERS, Spark Plug

(For Spark Plug Brushes—See Brushes, Spark Plug)

Ace—See Wallace Mfg. Co.
 Brewer Specialty Corp., 2453 S. Wabash Ave., Chicago, Ill. "Hury-Kane."
 Buckeye—See Central Brass & Fixture Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Champion Spark Plug Co., 804 Avondale Ave., Toledo, O. "Minute." (See page 651.)
 Davies & Co., J. P., 1819 Broadway, New York, N. Y. "Pikko."
 Globe Tool & Mfg. Co., 2635 Stephenson Ave., Los Angeles, Cal.
 Handy Spark Plug Cleaner Co., 17 Willow St., Lynn, Mass.
 Hury-Kane—See Brewer Specialty Corp.
 Markomi Co., Detroit, Mich. (See page 498.)
 Minute—See Champion Spark Plug Co.
 Moeller, J. F., 10822 S. Western Ave., Chicago, Ill. "Momaco."
 Momaco—See Moller, J. F.
 New York Mica Mfg. Co., 27 Clark St., Auburn, N. Y. "Wright."
 Pikko—See Davies & Co.
 Wallace Mfg. Co., 239 Halsey St., Newark, N. J. "Ace."
 Wright—See New York Mica Mfg. Co.

CLEANERS, STEAM ENGINE—See Boilers, Steam Engine Cleaning

CLEANERS, UPHOLSTERY—See Cleaners, Fabric; also Cleaners, Vacuum; also Nozzles, Air

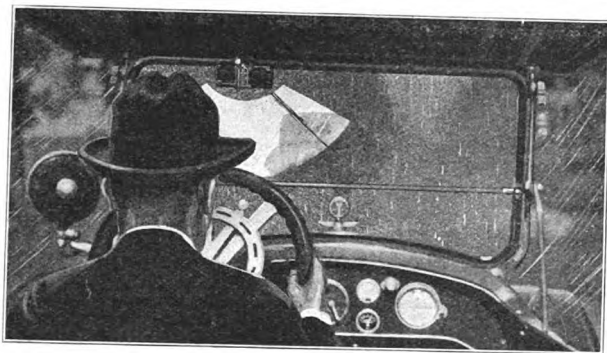
CLEANERS, Vacuum

Aagar Sales Co., 1342 Spring Garden St., Philadelphia, Pa.
 Air-Way Electric Appliance Corp., 618 Broadway, Toledo, O.
 Dumore—See Wisconsin Electric Co.
 Electric Vacuum Cleaner Co., Euclid & Ivanhoe Rd., Cleveland, O. "Handy Vac."
 Franklin Products, 1052 S. Clinton St., Syracuse, N. Y. "La France."
 Frantz Premier Co., 1111 Power Ave., N. E., Cleveland, O. "Handy."
 Handy—See Frantz Premier Co.
 Handy Vac—See Electric Vacuum Cleaner Co.
 La France—See Franklin Products.
 Van Auto Vacuum Co., 135 Hyde St., San Francisco, Cal.
 Wisconsin Electric Co., Racine, Wis. "Dumore." (See page 349.)

CLEANERS, WIND SHIELD—See Cleaners, Glass Wind Shield; also Compounds, Glass Wind Shield

Everything is listed under the NOUN or principal word

**IT
WORKS
FROM
THE
ENGINE**



MAYO-SKINNER AUTOMATIC WINDSHIELD CLEANER

The windshield cleaner that works by suction from the engine or vacuum tank; positive in action; never gets out of order and requires no attention whatsoever; always ready; cannot interfere with efficiency of the automobile motor; easily and quickly attached. One type for all cars. A proven success. Guaranteed for five (5) years. Gets the attention of the motorist instantly. A great seller, and money maker.

BE THE FIRST IN YOUR TERRITORY TO GET STARTED

Take advantage of our national advertising campaign. You will clean up big.

Send for our sales proposition and full particulars.

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THE MANY
GOOD DEVICES**



LONG POINT OF CONTACT PREVENTS WABBLING



FOR ALL
CARS
OPEN OR
CLOSED

CLEAR VISION
SHIELD WIPER
WITH EQUALIZER WHICH GIVES
AN EVEN WIPING SURFACE

ADJUSTABLE
TO THREE
DIFFERENT
LENGTHS



MANUFACTURED BY
AMERICAN AUTOMATIC DEVICES COMPANY
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THE Jiffy WINDSHIELD CLEANER



CLEANS BOTH SIDES
CLEAR ACROSS THE GLASS
CLEAR VISION FOR ALL

FITS ALL TWO PIECE WINDSHIELDS
STRAIGHT OR OVERLAPPING
FOR OPEN OR ENCLOSED CARS

SLIPS ON IN A JIFFY
PRICE \$1.50

NO ADJUSTING

**AN EVOLUTION
IN WINDSHIELD CLEANERS!**

The only cleaner that has equal pressure on both sides from top to bottom. Used on both open and enclosed cars. Fits all two-piece windshields. Cleans both sides of the glass. Instantly applied. Sells on sight.

Manufactured by

THE La VIETES MFG. COMPANY
STATION A NEW HAVEN, CONN.

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CLEANING TOOLS—See Tools, Terminal
Cleaning

CLEATS, Fibre Wiring

(See also Fibre, Hard)

American Vulcanized Fibre Co., Equitable Bldg., Wilmington, Del.

Blake Signal & Mfg. Co., Boston, Mass.
(See page 821.)

Continental Fibre Co., Newark, Del.
(See page 379.)

Diamond State Fibre Co., Bridgeport, Pa.
Franklin Products, 1053 S. Clinton St., Syracuse, N. Y.

Hartson Co., L. M., North Windham, Conn.
National Fibre & Insulation Co., Box 287, Yorklyn, Del. "S-S."
(See page 381.)

S-S—See National Fibre & Insulation Co.
Spaulding & Sons Co., J., Wheeler St., Tonawanda, N. Y.

Standard Fibre Co., 11-15 Miller St., Somerville, Mass.

Wilmington Fibre Specialty Co., Wilmington, Del. (See page 379.)

CLEATS, WIRING—See Cleats, Fibre Wiring

CLEVIS ANTI-RATTLERS FOR FORDS—
See Anti-Rattlers, Brake Rod

CLEVISES, AUTOMATIC TRACTOR RELEASE—See Hitches, Automatic Tractor

CLINCH RIVETS—See Rivets, Tubular and Clinch

CLIPPERS, Bolt and Rivet

(Hand Power)

Allen-Randall—See Porter, H. K.

Easy—See Porter, H. K.

Elm City—See Schollhorn Co.

Helwig Mfg. Co., Seventh & Locust Sts., St. Paul, Minn.

Mann Corp., Kankakee, Ill.

Metal Stamping Co., Long Island City, N. Y. "New Easy." (See page 168.)

New Easy—See Metal Stamping Co.

New Easy—See Porter, H. K.

O. K.—See Porter, H. K.

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Porter, H. K., Everett, Mass. "Easy," "New Easy," "Allen-Randall," "O. K." (See page 253.)

Roberts Mfg. Co., Park & Beacon Sts. (Somerville), Boston, Mass. "Victor."

Schollhorn Co., Wm., Wooster, Wallace & Chapel Sts., New Haven, Conn. "Elm City."
Victor—See Roberts Mfg. Co.

CLIPPERS, RIVET—See Clippers, Bolt and Rivet

CLIPS, BATTERY CHARGING—See Clips, Electrical Test

CLIPS, BATTERY HOLDING DOWN—See Clamps, Storage Battery Holding Down

CLIPS, Curtain

(For attaching curtains to wind shields and bow sockets)

Anchor—See North & Judd Mfg. Co.
North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

CLIPS, Electrical Test

(For testing electrical circuits at any point without removing insulation from wires or disconnecting)

Attacho—See Mueller Electric Co.

Automobile Ignition Supply Co., 1124 Michigan Blvd., Chicago, Ill. "Walker."

Bulldog—See Reliable Mfg. Co.

Du Chanois Electric Mfg. Co., C. F., 663 Bryson St., Youngstown, O. "Tiger."

Eureka—See Morse, Frank W.

F.F.—See France Mfg. Co.

France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F.F."

Frankel Connector Co., 177 Hudson St., New York, N. Y.

Hartung, Charles F., 108 W. Second St., Los Angeles, Cal. "Peerless."

Morse, Frank W., 289 Congress St., Boston, Mass. "Eureka." (See page 221.)

Mueller Electric Co., 2135 Fairmount Rd., Cleveland, O. "Attacho."

Peerless—See Hartung, Charles F.

Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O. "Bulldog."

Rose Mfg. Co., Frank, Hastings, Neb. (See page 675.)

Tiger—See Du Chanois Electric Co.

Walker—See Automobile Ignition Supply Co.

CLIPS, Fuse

Mutual Electric & Machine Co., 853 W. Fort St., Detroit, Mich.

CLIPS, HAT—See Hangers, Hat

CLIPS, Spring

(See also Forgings, Drop)

Bonney Forge & Tool Works, Allentown, Pa.

Brewer Tichenor Corp., Cortland, N. Y.

Clapp Mfg. Co., E. D., 305 W. Genesee St., Auburn, N. Y.

Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.

Columbus Bolt Works Co., Columbus, O. (See page 147.)

Steel Forgings Co., Brotherton Rd., Cincinnati, O.

Strieby & Foote Co., 301 Ogden St., Newark, N. J.

Union Forging Co., Union, N. Y. (See page 253.)

CLIPS, TEST—See Clips, Electrical Test

CLIPS, Trimmers

Buser-Porton Tufting Machine Co., Chillicothe, O.

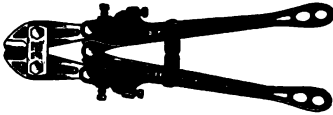
Staples & Hanford Co., Newburgh, N. Y.

CLOCK DIALS—See Dials, Luminous

CLOCKS, DASH BOARD—See Clocks, Electrically Wound; also Clocks, Hand Wound

Everything is listed under the NOUN or principal word

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O. K.
Mark
CUTTERS

**10-Inch**

Clipper Cut Jaws,
for 3-16-in. annealed bolts in the
thread, or 3-16-in. soft rivets.

Center Cut Jaws,
for 3-16-in. soft rods.

14-Inch

Clipper Cut Jaws,
for 1-4-in. annealed bolts in the
thread, or 1-4-in. soft rivets.

Center Cut Jaws,
for 1-4-in. soft rods.

Insulated Handles if desired.

H. K. PORTER
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"Easy," "New Easy" and Allen Rendall Bolt
Clippers

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Alcohol-Aluminum
Wind Shield Cleaner

An accessory that practically sells itself. Every motorist who sees it, wants it. The alcohol feed prevents dust, fog, rain, ice and snow from gathering and obstructing a clear view of what is ahead.

One treatment with alcohol lasts a long time. Always ready. Made of aluminum and nickel-plated brass, rust-proof and an ornament to every car. Retail price, \$3.00.

**Radiator Water Meter**

Shows, without the necessity of unscrewing the radiator cap whether the cooling system needs water or not. Fits any car, and improves its appearance. Absolutely reliable and the cheapest kind of insurance against trouble from overheating. Retail price, \$4.50.

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Union, N. Y.

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Let Your **Motor Clean**
Your Windshield

PRICE
\$12.50

Costs nothing to operate! The cleaner blade sweeps back and forth automatically, driven by the suction of the motor. Rain or snow never has a chance to settle. Both hands are always free for safe, comfortable driving! Installation is easy—just a tube from the cleaner to intake manifold.

List price, \$12.50 (west of Canada slightly higher). Attractive discounts to dealer and jobber. Write

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7914 Lake Ave. Cleveland, O.

FOLBERTH
Automatic
WINDSHIELD CLEANER

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CLOCKS, Electrically Wound

(For mounting on dash or instrument boards; for Limousine Clocks—See Watches, Limousine; also Cases, Toilet) ..

Boston Clock Co., 10 State St., Boston, Mass.
 Connecticut Clock Co., 89 Woodbine St., Hartford, Conn.
 Keith-Landis Corp., 332 S. La Salle St., Chicago, Ill.
 Sterling Clock Co., 220 E. 42nd St., New York, N. Y.

CLOCKS, Hand Wound

(For mounting on dash or instrument boards; See also Holders, Watch; for Limousine clocks—See Watches, Limousine; also Cases, Toilet)

Belmont—See New Haven Clock Co.
 Boston Clock Co., 10 State St., Boston, Mass.
 Chelsea Clock Co., 10 State St., Boston, Mass.
 Cowl—See New Haven Clock Co.
 Didisheim & Bro., Hipp, 26 W. 36th St., New York, N. Y. "Octo," "Hidico," "Wonsweek."
 Duane—See New Haven Clock Co.
 Florman Watch Co., 80 Nassau St., New York, N. Y.
 Glownite—See Mansfield, J. F.
 Hidico—See Didisheim & Bro.
 Keyless Auto Clock Co., 246 W. 59th St., New York, N. Y.
 Luminite Co., 144 W. 18th St., New York, N. Y. (See page 255.)
 Mansfield, J. F., 9 Maiden Lane, New York, N. Y. "Glownite." (See page 255.)
 Nebo—See New Haven Clock Co.
 New Haven Clock Co., 133 Hamilton St., New Haven, Conn. "New Ormond," "Duane," "Belmont," "Nebo," "Cowl."
 New Ormond—See New Haven Clock Co.
 Octo—See Didisheim & Bro.
 Peck-Hamre Mfg. Co., Berlin, Wis.
 Sessions Clock Co., Forestville, Conn. (See page 255.)
 Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 257.)
 Waltham Watch Co., Waltham, Mass.
 Waterbury Clock Co., Waterbury, Conn.
 Wonsweek—See Didisheim & Bro.

CLOCKS, Steering Wheel, for Fords

(See also Holders, Watch)

B-4-U—See Eisenstadt Mfg. Co.
 Eisenstadt Mfg. Co., Olive & 12th Sts., St. Louis, Mo. "B-4-U."

CLOCKS, Time Recording and Watchman's

(For Time Stamps—See Stamps, Time)

Chicago Watchmans Clock Co., 1526 S. Wabash Ave., Chicago, Ill.
 Eco Clock Co., 197 Congress St., Boston, Mass.
 Follett Time Recording Co., 9-11 W. Broadway, New York, N. Y.
 Hardinge Bros., 1770 Berteau Ave., Chicago, Ill.
 International Time Recording Co., Endicott, N. Y.
 Kastens, Henry, 419½ W. 27th St., New York, N. Y. (See page 255.)
 Newman Clock Co., 428 Broadway, New York, N. Y.
 Simplex Time Recorder Co., Time Ave., Gardner, Mass.

CLOCKS, WATCHMAN'S—See Clocks, Time Recording**CLOSED CAR CURTAINS FOR FORDS—See Curtains, Closed Car****CLOSETS, CLOTHES—See Lockers, Metal****CLOTH, ABRASIVE—See Paper, Emery and Sand****CLOTH, BRASS WIRE—See Cloth, Wire****CLOTH, BROAD—See Broadcloth****CLOTH, EMERY AND SAND—See Paper, Emery and Sand****CLOTH, Enameled**

Armstrong Cork Co., 124 23d St., Pittsburgh, Pa.
 Chandler Oil Cloth & Buckram Co., East Taunton, Mass.
 Cock—See Heath & Son.
 Columbus-Union Oil Cloth Co., E. Seventh St. & Big 4 R.R., Columbus, O.
 Heath & Son, Edmund F., 225 Warren St., Newark, N. J. "Cock."
 Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)
 Meritas—See Standard Textile Products Co.
 Monarch Linoleum & Rug Co., Bulletin Bldg., Philadelphia, Pa.
 Monarch Rubber & Oil Cloth Co., Drexel Bldg., Philadelphia, Pa.
 O'Bannon Corp., 200 Fifth Ave., New York, N. Y.
 Potter Sons & Co., Thomas, Second St. & Erie Ave., Philadelphia, Pa.
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
 Standard Textile Products Co., 320 Broadway, New York, N. Y. "Meritas."
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)

CLOTH, LEATHER—See Leather, Artificial**CLOTH, Mohair**

Autilux—See Midland Fabrics Co.
 Barrell Co. of New York, Wm. L., 50 Leonard St., New York, N. Y. "Wilbaco."
 Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. (See page 105.)
 Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. (See page 305.)
 Bull Dog—See Mutt Co.
 Carr Co., F. S., 31 Beach St., Boston, Mass. "Neverleek."
 Chase & Co., L. C., 89 Franklin St., Boston, Mass. "Wexford," "Velmo."
 Kantleak—See Scherer & Co.
 Laidlaw Co., 16 W. 60th St., New York, N. Y. "Limotex." (See pages 259 and 273.)
 Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)
 Limotex—See Laidlaw Co.
 Midland Fabrics Co., 228 W. 58th St., New York, N. Y. "Autilux." (See page 303.)
 Mutt Co., L. J., Boston, Mass. "Bull Dog." (See page 431.)

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Guaranteed Popular Price Auto Clocks



That will pay you a good profit and give excellent satisfaction

Made in one and eight day for cowl dash, also models for Ford Cars—Let us send you discount and circulars; they will interest you.

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PROPER TIMING MEANS BIGGER REPAIR PROFITS

The only way to get proper returns from your repair work is to know the actual time consumed on each job.

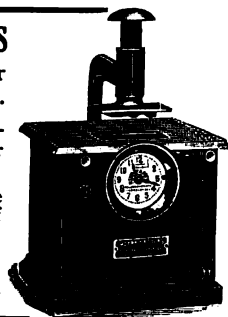
Henry Kastens Time Stamps furnish an accurate record of just how long each job takes—the correct basis for repair charges.

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CLOTH, Mohair (Continued)

Neverleek—See Carr Co.
 Pickens Auto Cloth Co., 239 Fourth Ave., New York, N. Y. (Importers.)
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich. "Kantleak."
 Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 257.)
 Strongtex—See Strong Textile Co.
 Toledo Auto Fabrics Co., Toledo, O. (See page 273.)
 Velmo—See Chase & Co.
 Weinberg & Co., S., 315 Fourth Ave., New York, N. Y.
 Wexford—See Chase & Co.
 Wilbaco—See Barrell Co. of New York.

CLOTH, Rubber Coated

Aetna Rubber Co., 132 Hanover St., Boston, Mass. (See page 257.)
 Athol Mfg. Co., Athol, Mass. (See page 517.)
 Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass. "Everdry," "Twintite."
 Bradford Fabrics Co., 1753-55 Broadway, New York, N. Y. (See page 105.)
 Carr Co., F. B., 31 Beach St., Boston, Mass. "Neverleek."
 Chase & Co., L. C., 89 Franklin St., Boston, Mass. "Drednaut."
 Cock—See Heath & Son.
 Drednaut—See Chase & Co.
 Dridek—See Muttly Co.
 du Pont de Nemours & Co., E. I. (Fabrikoid Div.), Wilmington, Del. "Fairfield," "Pontop," "Luxar."
 Everdry—See Boston Woven Hose & Rubber Co.
 Fairfield—See du Pont de Nemours & Co.
 Halotex—See Laidlaw Co.
 Haartz, J. G., 10 High St., Boston, Mass. "Paramount."
 Heath & Son, Edmund F., 225 Warren St., Newark, N. J. "Cock."
 Hodgman Rubber Co., Tuckahoe, N. Y.
 Kantleak—See Scherer & Co.
 Kramer, Griffel & Rappaport, 143 W. 56th St., New York, N. Y.
 Laidlaw Co., 18 W. 60th St., New York, N. Y. "Onyxcloth," "Halotex," "Storm King," "Neutop," "Rubbertex." (See pages 259 and 273.)
 Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)
 Luxar—See du Pont de Nemours & Co.
 Monarch Rubber & Oil Cloth Co., Drexel Bldg., Philadelphia, Pa.
 Muttly Co., L. J., Boston, Mass. "Dridek." (See page 431.)
 Neutop—See Laidlaw Co.
 Neverleek—See Carr Co.
 Newark Rubber Co., Schley St., Garfield, N. J.
 O'Bannon Corp., 200 Fifth Ave., New York, N. Y.
 Onyxcloth—See Laidlaw Co.
 Paramount—See Haartz, J. G.
 Plymouth Rubber Co., 50 State St., Boston, Mass.
 Pocono Rubber Cloth Co., Trenton, N. J. "Pocotex." (See page 259.)
 Pocotex—See Pocono Rubber Cloth Co.
 Pontop—See du Pont de Nemours & Co.
 Rubbertex—See Laidlaw Co.
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich. "Kantleak."
 Seamans & Cobb Co., 140 Essex St., Boston, Mass.

Storm King—See Laidlaw Co.
 Strong Textile Co., 245 W. 55th St., New York, N. Y. "Strongtex." (See page 257.)
 Strongtex—See Strong Textile Co.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Toledo Auto Fabrics Co., Toledo, O. (See page 273.)
 Twintite—See Boston Woven Hose & Rubber Co.
 United States Rubber Co., 1790 Broadway, New York, N. Y.
 Vulcan Proofing Co., 58th St. & First Ave., Brooklyn, N. Y.

CLOTH, STRAINER—See Cloth, Wire**CLOTH TRIMMINGS—See Trimmings, Cloth and Carpet****CLOTH, UPHOLSTERY—See Cloth, Mohair; also Cloth, Enamel; also Cloth, Rubber; also Broadcloth; also Silk; also Whipcord****CLOTH, Wire**

(For use in Strainers, Horn Screens, etc.)

Buffalo Wire Works Co., 431 Torrance, Buffalo, N. Y.
 Cleveland Wire Cloth & Mfg. Co., 2573-31 E. 78th St., Cleveland, O.
 Howard & Morse, 45 Fulton St., New York, N. Y. "National."
 Michigan Wire Cloth Co., 2100 Howard St., Detroit, Mich.
 Multi-Metal Co., 251 W. 19th St., New York, N. Y.
 National—See Howard & Morse.
 Newark Wire Cloth Co., 224 Verona Ave., Newark, N. J.
 New Jersey Wire Cloth Co., 613 E. Broad St., Trenton, N. J.
 Tyler Co., W. S., Superior Ave. & E. 38th St., Cleveland, O.

CLOTHES LOCKERS—See Lockers, Metal Clothes**CLOTHING, Motorists**

(See also Caps; also Gloves; also Leggings; also Mufflers)

Accurate Cover Co., 373 Canal St., New York, N. Y. "Rubbertex," "Slipovers."
 All-Over—See Ohio Overall Co.
 Armi-Khaki—See Francau-Sweeney Co.
 Auto-Shirt Co., Midland, Md.
 Automobile Apparel Co., Bush Ave., Port Chester, N. Y.
 Ballard & Co., J. O., Pine St., Malone, N. Y.
 Beardsley & Haft Co., Columbus, O. "Slipovers."
 Beats All—See Standard Oiled Clothing Co.
 Beaver Dam Overall Mfg. Co., 113 Rowell St., Beaver Dam, Wis.
 Belair Helmet Co., 160 Fifth Ave., New York, N. Y.
 Bishop Co., J. H., Wyandotte, Mich.
 Blauvelt Knitting Co., 34 Green St., Newark, N. J.
 Boynton's Improved Process Oil Clothing Co., Vincent St., Gloucester, Mass.
 Bradley Knitting Co., Delavan, Wis.
 Camden—See Goodrich Co.
 Charat Co., 140 W. 34th St., New York, N. Y.
 Chippewa Falls Woolen Mill, Chippewa Falls, Wis.

Everything is listed under the NOUN or principal word

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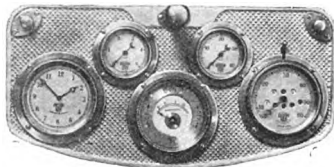
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CLOTHING, Motorists (Continued)

Comfort Auto Robe Co., Waterloo, N. Y.
 Connecticut Coat & Cover Co., Shelton, Conn.
 Coveralls—See Utility Garment Co.
 Crosby-Frisian Fur Co., 571 Lyell Ave., Rochester, N. Y.
 Dan Oversuit Co., 500 W. Division St., Chicago, Ill.
 Elco—See Loewenberg Co.
 Ellsworth & Thayer Mfg. Co., 336-40 Broadway, Milwaukee, Wis. "Great Western."
 Everdri—See Loewenberg Co.
 Everett Mfg. Co., Everett, Mass. "Everite."
 Everite—See Everett Mfg. Co.
 Favorite Knitting Mills, 1383 W. Sixth St., Cleveland, O.
 Finck & Co., W. M., 3633 Gratiot Ave., Detroit, Mich.
 Fitzwell—See Niagara Fabric Mfg. Co.
 Freneau-Sweeny Co., 393 Fifth Ave., New York, N. Y. "Armi-Khaki."
 Goodrich Co., B. F., S. Main St., Akron, O. "Camden."
 Goodyear Rubber Co., 787 Broadway, New York, N. Y.
 Great Western—See Ellsworth & Thayer Mfg. Co.
 Gulterman Bros., St. Paul, Minn.
 Hall & Co., R. S., Versailles, O.
 Hettrick Mfg. Co., Toledo, O.
 Hill Mfg. Co., Richard F., 217-19 High St., Newark, N. J. "Kant Leak."
 Huchberger & Co., J., 93 Fifth Ave., New York, N. Y.
 Improved Mfg. Co., Ashland, O.
 International Coat Co., 114-16 Fifth Ave., New York, N. Y.
 Jaegers E. W. S. Co., 395 Fourth Ave., New York, N. Y.
 Kant Leak—See Hill Mfg. Co.
 Kenreign—See Kenyon Co.
 Kenyon Co., C., 764 Pacific St., Brooklyn, N. Y. "Kenreign."
 Labor-Alls—See Ward Co.
 Lamm Bros., 339-41 N. Gay St., Baltimore, Md.
 Lee Mercantile Co., H. D., 22d & Gillham Sts., Kansas City, Mo. "Union-Alls."
 Loewenberg Co., 58-62 Colden St., Newark, N. J. "Everdri," "Elco."
 Longwool—See Wallace Co.
 McKibben, Driscoll & Dorsey, Fifth St. & Broadway, St. Paul, Minn.
 Manhattan—See Standard Oiled Clothing Co.
 Mann Co., Léon, 906 Broadway, New York, N. Y.
 Meler & Co., Louis, 1002-10 Central Ave., Indianapolis, Ind.
 Metropolitan Air Goods Co., Marble St., Athol, Mass.
 Michigan Motor Garment Co., Greenville, Mich. "Outerall."
 Milwaukee Tanning & Clothing Co., Hanover & Florida Sts., Milwaukee, Wis.
 Moore-Smith Co., 250 Devonshire St., Boston, Mass.
 Morawetz Co., 217-35 E. Water St., Milwaukee, Wis.
 New Process Co., Warren, Pa.
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y.
 Norman Garment Co., 32 Union Sq., New York, N. Y.
 Ohio Garment Co., (Automotive Dept.), Springfield, O.
 Ohio Overall Co., Wooster, O. "All-Over."
 Outerall—See Michigan Motor Garment Co.
 Oshkosh Overall Co., 33 Otter St., Oshkosh, Wis.
 Patrick-Duluth Woolen Mills, Duluth, Minn.

Poledo Coat Co., 25 Thorndike St., Cambridge, Mass.
 Pontiac Knitting Co., Pontiac, Mich.
 Powers Mfg. Co., Waterloo, Ia. "Suits-alls." (See page 530.)
 Protexall Co., 500 Pearl St., Abingdon, Ill.
 Reliable Coat Co., 113 Blum St., Union Hill, N. J.
 Revillon Freres, 19 W. 34th St., New York, N. Y.
 Rosenwald & Well, 3315 Armitage Ave., Chicago, Ill.
 Rubber-All Products, 321 Broadway, New York, N. Y.
 Rubbertex—See Accurate Cover Co.
 Russits Fur Co., John, 7 E. 48th St., New York, N. Y.
 Sanders Co., 218½ Indiana Ave., Indianapolis, Ind.
 Scott & Co., 340 Washington St., Boston, Mass.
 Shanhouse & Sons, W., Rockford, Ill.
 Shields—See Tel-Tex Co.
 Slipcovers—See Accurate Cover Co.
 Slipcovers—See Beardsley & Haft Co.
 Standard Oiled Clothing Co., 310 E. 152d St., New York, N. Y. "Beats All," "Manhattan."
 Suits-alls—See Powers Mfg. Co.
 Tel-Tex Co., 700 Elm St., Dallas, Tex. "Shields." (See page 257.)
 Tower Co., A. J., 24 Simmons St., Boston, Mass.
 Union-Alls—See Lee Mercantile Co.
 Union Overall Co., 201 N. Madison St., Rockford, Ill.
 United States Rubber Co., 1790 Broadway, New York, N. Y.
 Utility Garment Co., 200 N. Jefferson St., Chicago, Ill. "Coveralls."
 Wallace Co., Hugh, 2616-40 E. Grand Blvd., Detroit, Mich. "Longwool."
 Ward Co., C. E., 101-06 Williams St., New London, O. "Labor-Alls."

CLOTHS, POLISHING—See Wipers

CLOTHS, WIPING—See Wipers

CLUTCH CHECKS—See Checks, Clutch

CLUTCH COMPOUNDS—See Dressing, Clutch

CLUTCH CONTROLS FOR FORDS—See Controls, Clutch

CLUTCH DISCS—See Discs, Steel Clutch; also Lining, Brake

CLUTCH DRESSING—See Dressing, Clutch

CLUTCH FACINGS—See Lining, Brake; also Leather, Friction

CLUTCH GOVERNORS—See Governors, Clutch

CLUTCH HOLDERS FOR FORDS—See Holders, Clutch

CLUTCH INSERTS—See Corks, Brake and Clutch

CLUTCH LININGS—See Lining, Brake; also Leather, Friction

CLUTCH PULLEYS—See Pulleys, Traction Friction Clutch

CLUTCH RELEASERS FOR FORDS—See Releasers, Clutch

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CLUTCH SHAFTS—See Shafts, Transmission**CLUTCHES, Automobile Friction**

Ansted Engineering Co., 20th & Columbia Sts., Connersville, Ind.
 Bierman—See Strite Governor Pulley Co.
 Borg & Beck Co., 914 S. Michigan Ave., Chicago, Ill. (See page 261.)
 Chicago Machine & Motor Co., 1510-16 Clybourn Ave., Chicago, Ill.
 Clarotto Mfg. Co., 1215-19 Fourth St., Milwaukee, Wis.
 D A C—See Detroit Accessories Corp.
 Detlaff Co., A. J., 647 E. Lafayette Ave., Detroit, Mich.
 Detroit Accessories Corp., Detroit, Mich. "D A C." (See page 669.)
 Fuller & Sons Mfg. Co., Kalamazoo, Mich.
 Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn.
 Hele-Shaw—See Merchant & Evans Co.
 Hilliard Clutch & Machinery Co., 102 W. Fourth St., Elmira, N. Y.
 Hoosier Clutch Co., 718-34 S. Elliott St., Muncie, Ind.
 Jones Gear Co., 965 Wayside Rd., Cleveland, O.
 Lauth Clutch Co., J., 3616 Pine Grove Ave., Chicago, Ill.
 List Mfg. Co., E. J., Havana, Ill.
 M. & E.—See Merchant & Evans Co.
 Mechanics Machine Co., Ninth St. & 19th Ave., Rockford, Ill.
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Hele-Shaw," "M. & E."
 Strite Governor Pulley Co., 301 S. Third St., Minneapolis, Minn. "Bierman."
 Twin Disc Clutch Co., 14th & Clark Sts., Racine, Wis.
 Warner Gear Co., Muncie, Ind. (See page 419.)

CLUTCHES, Tractor Friction

Bierman—See Strite Governor Pulley Co.
 Chicago Machine & Motor Co., 1510-16 Clybourn Ave., Chicago, Ill.
 Cotta Gear Co., 117-27 Morgan St., Rockford, Ill.
 Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn.
 Hele-Shaw—See Merchant & Evans Co.
 Hilliard Clutch & Machinery Co., 102 W. Fourth St., Elmira, N. Y.
 Hoosier Clutch Co., 718-34 S. Elliott St., Muncie, Ind.
 Johnson Machine Co., Carlyle, 52 Main St., Manchester, Conn.
 Lauth Clutch Co., J., 3616 Pine Grove Ave., Chicago, Ill.
 M. & E.—See Merchant & Evans Co.
 Medway Sales Corp., Racine, Wis. (Sole Distributor for Toro Motor Co., Minneapolis, Minn. "Stouffer.")
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Hele-Shaw," "M. & E."
 Stouffer—See Medway Sales Corp.
 Strite Governor Pulley Co., 307 Third St., S., Minneapolis, Minn. "Bierman."
 Toro Motor Co.—See Medway Sales Corp.
 Twin Disc Clutch Co., Racine, Wis.

COACH LACE—See Lace, Coach**COACH SCREWS—See Screws, Coach****COAT RAIL BAGS—See Bags, Coat Rail****COAT RAILS—See Rails, Robe or Coat****COCK CONTROL RODS FOR FORDS—See Rods, Gasoline Cock Control; also Wrenches, Oil Cock****COCK WRENCHES FOR FORDS—See Wrenches, Oil Cock****COCKS, DRAIN—See Cocks, Spring Key; also Cocks, Standard Pet****COCKS, FUEL SUPPLY AND RESERVE—See Valves, Two Way Tank****COCKS, Fuel Supply and Reserve, for Fords**

(Two way cock to be attached to gasoline tank to ensure a reserve supply of fuel for emergency)

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Arlington Mfg. Co., Mariners Harbor, N. Y. "Save-A-Walk."
 Byrne, Kingston & Co., Kokomo, Ind. "Kingston."
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Gas-O-Larm—See Locktite Patch Co.
 Kingston—See Byrne, Kingston & Co.
 Locktite Patch Co., Detroit, Mich. "Gas-O-Larm." (See page 621.)
 Save-A-Walk—See Arlington Mfg. Co.
 T-R—See Tolman-Reeve Engineering Corp.
 Tolman-Reeve Engineering Corp., 3104 Michigan Ave., Chicago, Ill. "T-R."
 Stevens & Co., 375 Broadway, New York, N. Y. (See page 197.)

COCKS, GASOLINE—See Cocks, Spring Key; also Cocks, Standard Pet**COCKS, PRIMING—See Cups, Priming****COCKS, RESERVE—See Valves, Two Way Tank****COCKS, RESERVE, FOR FORDS—See Cocks, Fuel Supply****COCKS, Spring Key**

Acme Brass Works, 8211 Collins Ave., Detroit, Mich.
 Amalgamated Brass Co., Blanchester, O.
 American Brass & Iron Co., Detroit, Mich. (See page 263.)
 Brass Products Co., 3661-73 Palmer Ave., E., Detroit, Mich.
 Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.
 Detroit Brass & Malleable Works, 1177 Holden Ave., Detroit, Mich.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Hancock Mfg. Co., 302 E. Henry St., Charlotte, Mich.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Kant-Leak—See Michigan Lubricator Co.
 Lincoln Brass Works, Detroit, Mich. (See page 263.)
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

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COCKS, Spring Key (Continued)

Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich. "Kant Leak."
 National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
 Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
 Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
 Standard Brass Works, 2931 Wight St., Detroit, Mich.

COCKS, Standard Pet

Acorn Brass Mfg. Co., 51 N. Peoria St., Chicago, Ill.
 American Brass & Iron Co., Detroit, Mich. (See page 203.)
 American Lubricator Co., Summit Ave. & Wabash Ry., Detroit, Mich.
 Belfield Co., E., 425 N. Broad St., Philadelphia, Pa.
 Belknap Mfg. Co., Bridgeport, Conn.
 Brass Products Co., 3661-78 Palmer Ave., E., Detroit, Mich.
 Britton—See Frasse & Co.
 Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.
 Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.
 Crane Co., 519 S. Canal St., Chicago, Ill.
 Detroit Lubricator Co., 5342-5936 Trumbull Ave., Detroit, Mich.
 Detroit Brass & Malleable Works, 1177 Holden Ave., Detroit, Mich.
 Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.
 Eagle Brass Works, Dubois & Franklin Sts., Detroit, Mich.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. "Britton."
 (See page 819.)
 Haydenville Co., Haydenville, Mass.
 Homer Brass Works, 231 Race St., Philadelphia, Pa.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Jarecki Mfg. Co., Erie, Pa.
 Kant-Leak—See Michigan Lubricator Co.
 Kelly & Jones Co., Greensburg, Pa.
 Lincoln Brass Works, Detroit, Mich. (See page 263.)
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
 McNab & Harlin Mfg. Co., 56 John St., New York, N. Y.
 McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
 Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich. "Kant-Leak."
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)
 National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
 Nolte Brass Co., Springfield, O.
 Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
 Register's Sons Co., J., Holliday & Saratoga Sts., Baltimore, Md.
 Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
 Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
 Standard Brass Works, 2931 Wight St., Detroit, Mich.
 Sterling & Skinner Mfg. Co., 2672 E. Grand Blvd., Detroit, Mich.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)

COCOA MATS—See Mats, Cocoa

COIL BOX PROTECTORS FOR FORDS—See Protectors, Coil Box

COIL BOXES—See Boxes, Spark Coil

COIL LOCKS FOR FORDS—See Lock Switch and Coil

COIL PARTS—See Parts, Magneto, Co and Distributor

COIL SPRINGS—See Springs, Machinery

COIL TESTERS—See Testers, Coil

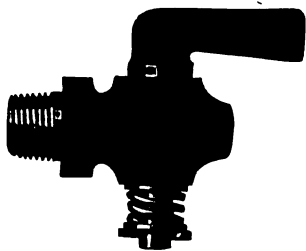
COIL WINDINGS—See Windings, Start and Ignition

COILS, Spark

(See also Systems, Battery Ignition)

American Bosch Magneto Corp. (Brightwood Springfield, Mass. "Bosch."
 American Coil Co., Foxboro, Mass.
 Atwater Kent Mfg Co., 4937 Stenton Ave., Philadelphia, Pa.
 Bee Cee—See Brown & Caine.
 Berkshire—See Pittsfield Spark Coil Co.
 Bosch—See American Bosch Magneto Corp.
 Brown & Caine, 2317-21 Calumet Ave., Chicago, Ill. "Bee Cee." (See page 27)
 Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)
 Fansteel Products Co., North Chicago, Ill. (See page 909.)
 Gray-Hofman Co., 542-548 North Parks Ave., Chicago, Ill. "Sturdy." (See page 265.)
 Heco—See Heinze Electric Co.
 Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."
 J & B Mfg. Co., Pittsfield, Mass.
 Jefferson Electric Co., 426-30 S. Green St., Chicago, Ill.
 Jewell—See Pittsfield Spark Coil Co.
 K-W Ignition Co., 2900 Chester Ave., Clinton, O.
 Kingston—See Kokomo Electric Co.
 Kokomo Electric Co., 1450 N. Webster Kokomo, Ind. "Kingston."
 Lemke Electric Co., 505-13 Cedar St., Milwaukee, Wis.
 Manhattan Electrical Supply Co., 17 Park New York, N. Y. "Mesco."
 Mesco—See Manhattan Electrical Supply
 Micatite—See Pittsfield Spark Coil Co.
 Millwood-Brackett Co., Des Moines, Ia. (See page 327.)
 National Coil Co., 221 N. Cedar St., Lansing, Mich.
 New York Coil Co., 338-40 Pearl St., New York, N. Y.
 Pittsfield Spark Coil Co., Pittsfield, Mass. "Jewell," "Berkshire," "Micatite."
 Spiltdorf Electrical Co., 98 Warren St., Newark, N. J.
 Standard Ignition Co., 329 E. Ford Rd., New York, N. Y. (See page 35)
 Sturdy—See Gray-Hofman Co.
 Wells Mfg. Co., R. C., 114 S. Brooke St., du Lac, Wis.
 Williams, E. Q., 535-29 S. Clinton St., Chicago, N. Y.

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COILS, Spark, for Fords(See also *Vibrators, Master*)**Heco**—See Heinze Electric Co.**Heinze Electric Co.**, Lawrence St., Lowell, Mass. "Heco."**COLD CHISELS**—See **Chisels, Cold and Cape****COLD ROLLED STEEL**—See **Steel, Cold Rolled****COLD ROLLED STRIP STEEL**—See **Steel, Cold Rolled Strip****COLD SAWS**—See **Saws, Cold****COLLAPSIBLE BUCKETS**—See **Buckets, Collapsible****COLLAPSIBLE PAILS**—See **Buckets, Collapsible****COLLAPSIBLE SPADES**—See **Spades and Shovels, Collapsible****COLLECTION NOTICES**—See **Notices, Collection****COLORS, COACH**—See **Paints and Colors****COLUMN BRACES FOR FORDS**—See **Braces, Steering Column****COLUMNS, Water and Boiler Alarms****Reliance Gauge Column Co.**, 45 E. Prospect St., Cleveland, O.**COMMUTATORS, Electric Motor****Cameron Electrical Mfg. Co.**, 205 Main St., Ansonia, Conn.**Columbia Machine Works & Malleable Iron Co.**, Chestnut St. & Atlantic Ave., Brooklyn, N. Y.**Electric Materials Co.**, North East, Pa.**Eureka Co.**, North East, Pa.**Homer Commutator Co.**, 4748 Hough Ave., N. E., Cleveland, O.**Toledo Standard Commutator Co.**, Toledo, O.**COMMUTATORS, SPARK**—See **Timers, Ignition****COMPENSATING GEARS**—See **Gears, Differential****COMPOSITION CASTINGS**—See **Castings, Bronze and Brass****COMPOSITION CONTROL LEVER BALLS**—See **Balls, Composition Control Lever****COMPOSITION GASKETS**—See **Packing****COMPOSITION, Insulating**(Substitute for *Hard Rubber*)**American Insulator Corp.**, New Freedom, Pa. (See page 187.)**Bakelite**—See **Boonton Rubber Mfg. Co.****Bakelite**—See **Evilo Molding Co.****Bakelite**—See **General Bakelite Co.****Bakelite-Dilecto**—See **Continental Fibre Co. Bakelite Micarta**—See **Westinghouse Electric & Mfg. Co.****Belden Mfg. Co.**, 2300 South Western Ave., Chicago, Ill. (See page 187.)**Boonton Rubber Mfg. Co.**, 323 Fanny Rd., Boonton, N. J. "Bakelite."**Condensite**—See **Duranoid Mfg. Co.****Condensite**—See **Insulation Products Co.****Condensite Co. of America**, Grove St., Bloomfield, N. J.**Continental Fibre Co.**, Newark, Del. "Bakelite-Dilecto." (See page 379.)**Cutler Hammer Mfg. Co.**, 280 St. Paul Ave., Milwaukee, Wis. "Thermoplas." "Pyroplas."**Dane Molding Co.**, 335-41 Sixth Ave., Newark, N. J.**Dayton Insulating Die Co.**, Dayton, O.**Duranoid Mfg. Co.**, 213-21 Chestnut St., Newark, N. J. "Condensite."**Electrose Mfg. Co.**, 70 Washington St., Brooklyn, N. Y.**Evilo Molding Co.**, Westfield, N. J. "Bakelite."**Garfield Mfg. Co.**, Garfield, N. J. "Gummon." "Tegit." "Hemit."**General Bakelite Co.**, 2 Rector St., New York, N. Y. "Bakelite."**General Ignition Products Co.**, 548 Atlantic Ave., Brooklyn, N. Y.**General Insulate Co.**, 1008 Atlantic Ave., Brooklyn, N. Y. "Hi-Heat."**Gummon**—See **Garfield Mfg. Co.****Hemit**—See **Garfield Mfg. Co.****Hi-Heat**—See **General Insulate Co.****Insulation Products Co.**, Richland & Finance Sts., Pittsburgh, Pa. "Condensite."**International Insulating Corp.**, ft. Mechanic St., Springfield, Mass.**J. P. Bakelite**—See **Johns-Manville Co.****Johns-Manville Co.**, H. W., Madison Ave. & 41st St., New York, N. Y. (Sole Distributors for **Johns-Pratt Co.**, Hartford, Conn. "Noark." "J. P. Bakelite." "Vulcabeston.")**Johns-Pratt Co.**—See **Johns-Manville Co.****Niagara Insul-Bake Specialty Co.**, 483-93 Delaware Ave., Albany, N. Y.**Noark**—See **Johns-Manville Co.****Redmanol Chemical Products Co.**, 686 W. 22d St., Chicago, Ill. (See page 225.)**Shaw Insulator Co.**, 5-7 Kirk Pl., Newark, N. J.**Specialty Insul. Mfg. Co.**, Center St. & R.R. Ave., Hoosick Falls, N. Y.**Tegit**—See **Garfield Mfg. Co.****Vulcabeston**—See **Johns-Manville Co.****Westinghouse Electric & Mfg. Co.**, East Pittsburgh, Pa. "Bakelite Micarta."**COMPOUNDS, Anti-Freezing**(See also *Alcohol, Denatured*)**Ad-el-ite**—See **Adams & Elting Co.****Adams & Elting Co.**, 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)**Alc-O-Rene**—See **Hall-Thompson Co.****Alcemo Mfg. Co.**, 20 Bridge St., Newark, N. J. "Alcola."**Alcola**—See **Alcemo Mfg. Co.****All-In-One**—See **Scientific Mfg. Co.****American Sales Co.**, 1654-57 Monadnock Block, Chicago, Ill. (Sole Distributors for **M & S Chemical Co.**, Chicago, Ill.)**Boyer Chemical Laboratory**, 940 N. Clark St., Chicago, Ill.

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Sturdy REPLACEMENT COILS



TYPE R 214



TYPE D 211



TYPE R 218



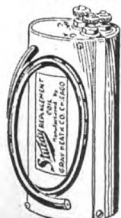
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Sturdy Replacement Coils have no superior. They are designed to replace burned out coils used on all standard cars today. Every Coil is carefully tested before it leaves our plant and is guaranteed to give satisfaction.

We will replace, at any time, any Coil found to be defective in material or workmanship.



TYPE C 204



TYPE C 216



TYPE A 400



TYPE A 201

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COMPOUNDS, Anti-Freezing (Continued)

Buco—See Burgin & Co.
 Burgin & Co., 487 Broadway, New York, N. Y. "Bucu."
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)
 Day & Co., James B., 224-26 W. Superior St., Chicago, Ill.
 Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Freeze-Not—See G. & F. Products Co.
 Freeze-Proof—See Johnson & Son.
 Frezalene Mfg. Co., 32-40 S. Clinton St., Chicago, Ill.
 G. & F. Products Co., 1314 12th St., Rock Island, Ill. "Freeze-Not."
 Hall-Thompson Co., Dept. A., Hartford, Conn. "Alc-O-Rene." (See page 655.)
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Jewel—See Wadsworth-Howland Co.
 Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Freeze-Proof."
 Kant Freeze—See Wapakoneta Mfg. Co.
 Liberty Chemical Works, Chicago, Ill. (See page 783.)
 M & S Chemical Co.—See American Sales Co.
 Magie Bros., 110-12 S. Clinton St., Chicago, Ill.
 Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
 Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
 Mormiles Co., 416 Sherman St., Chicago, Ill.
 No-Freeze—See Sterns & White Co.
 Non-Freeze-Ene—See Permatex Co.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco Twelve-Twenty." (See page 275.)
 Norwesco Twelve-Twenty—See Northwestern Chemical Co.
 Nulomoline Co., 111 Wall St., New York, N. Y.
 P & R Auto Specialty Mfg. Co., 1660 Eastern Parkway, Brooklyn, N. Y. "Two Star." (See page 279.)
 Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Se-Ro-eZ."
 Peerless—See Columbus Varnish Co.
 Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 623.)
 Permatex Co., Sheepshead Bay, N. Y. "Non-Freeze-Ene." (See page 277.)
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rie-Nie—See Durkee-Atwood Co.
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky.
 Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."
 Se-Ro-eZ—See Panvar Co.
 Sterns & White Co., 359 N. Franklin St., Chicago, Ill. "No-Freeze."
 Sterno Corp., New York, N. Y. (See page 269.)
 Tankli Chemical Sales Co., 224 High St., Cleveland, O.
 Two Star—See P & R Auto Specialty Mfg. Co.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Wapakoneta Mfg. Co., Wapakoneta, O. "Kant Freeze."
 Whiz—See Hollingshead Co.

COMPOUNDS, Bearing Grinding

Atlas Mfg. Co., Dept. D., Millvale Station, Pittsburgh, Pa. (See page 875.)
 Kwik-Ak-Shun—See United States Products Co.
 M. T. K. Products Co., Alaska Bldg., Seattle, Wash. "Timesaver." (See page 279.)
 100 Per Cent—See Renrew Products Co.
 O-U-E-Z—See Southern Bearing Compound Co.
 Renrew Products Co., 370 West 51st St., New York, N. Y. "100 Per Cent." (See page 281.)
 Southern Bearing Compound Co., Little Rock Ark. "O-U-E-Z."
 Timesaver—See M. T. K. Products Co.
 United States Products Co., Highland Bldg., Pittsburgh, Pa. "Kwik-Ak-Shun."
 Universal Auto Parts Co., 268 Martill St., Portland, Ore. (Pacific Coast Distributors for "Kwik-Ak-Shun" Compounds.) (See page 157.)
 Zip Mfg. Co., Denver, Colo. (See page 281.)

COMPOUNDS, BRAKE—See Dressing Brake**COMPOUNDS, Brazing**

A. & J. Mfg. Co., 559 W. Lake St., Chicago, Ill. "Brasiron."
 Acme—See Universal Fluxine Co.
 Adam, Inc., Hector Co., 480 Lexington Ave., New York, N. Y. "Fuseon." (In porter.) (See page 323.)
 Anti-Borax Compounds Co., 1501 Wall St., Fort Wayne, Ind. "Crescent."
 Banner—See Cortland Specialty Co.
 Braziron—See A. & J. Mfg. Co.
 Cortland Specialty Co., 174-78 Railroad St., Cortland, N. Y. "Banner."
 Cortland Welding Compound Co., Cortland, N. Y. "Star."
 Crescent—See Anti-Borax Compounds Co.
 Dixon Crucible Co., Joseph, Jersey City, N. J.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Ever Right—See Fry, Keyser.
 Fluxine—See Krembs & Co.
 Fry, Keyser, 616-22 N. Eighth St., Reading, Pa. "Ever Right."
 Fuseon—See Adam, Inc., Hector Co.
 Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 655.)
 Kast-I-On—See Taber, Arthur L.
 Krembs & Co., 173 N. Green St., Chicago, Ill. "Fluxine."
 National Rubber & Specialties Co., 4423 Chickering Ave., Cincinnati, O. "Red Cross"
 Nicro—See Peters, Inc.
 P. W. Mfg. Co., Philadelphia, Pa.
 Peters, Inc., Widener Bldg., Philadelphia, Pa. "Nicro." (See page 695.)
 Phillips-Lafitte Co., Pennsylvania Bldg., Philadelphia, Pa.
 Red Cross—See National Rubber & Specialties Co.
 Rie-Nie—See Durkee-Atwood Co.
 Schneider, Emil, 296-306 South St., Newton, Mass. "Tichon."
 Standard Brazing Co., 45 Bromfield St., Boston, Mass. "Tichon."
 Standard Mfg. Co., 318 S. Canal St., Chicago, Ill. "Superior."
 Star—See Cortland Welding Compound Co.
 Superior—See Standard Mfg. Co.
 Taber, Arthur L., 218 E. Sixth St., Cortland, Cal. "Kast-I-On."
 Tichon—See Standard Brazing Co.

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not just to sell"*

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AD-EL-ITE NON-FREEZING LIQUID

Is Made From the Old Reliable Formula

Alcohol and Glycerine

Will not freeze at 35° below zero. Harmless to metals and rubber. Contains no objectionable "dope." More efficient than plain alcohol. Put up in barrels, five-gallon and one-gallon cans.

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ANTI-FREEZE SOLUTION

Freezing point—none
Boiling point—Higher than water
Evaporation—Practically none
Corrosive action—Less than water

Eminent Chemists say this is the ideal solution for automobile radiators to prevent freezing as it will in no way harm the working parts, reasonably priced and guaranteed in every respect. Dealers and jobbers should communicate with us at once for territory and prices.

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COMPOUNDS, Brazing (Cont'd)

Tubular Products Co., 53 Railroad Ave., Southington, Conn.
 Universal Fluxine Co., 604 S. Main St., Urbana, O. "Acme."
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
 Wonder Worker—See Hall-Thompson Co.

COMPOUNDS, Buffing and Polishing

Acme—See Munning & Co.
 Bennett-O'Connell Co., 3600 S. Morgan St., Chicago, Ill. "Mascot," "Excel-All."
 Dixon, Wm., 39 John St., New York, N. Y.
 Excel-All—See Bennett-O'Connell Co.
 Mascot—See Bennett-O'Connell Co.
 Munning & Co., A. P., Matawan, N. J., "Acme."
 Stevens, Frederic B., Third & Larned Sts., Detroit, Mich. "White Rose," "White Columbia."
 White Columbia—See Stevens, Frederic B.
 White Rose—See Stevens, Frederic B.

COMPOUNDS, Carbon Removing

(See also Removers, Carbon; also Machines, Motor Descarbonizing; also Moisteners, Air or Mixture)

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite."
 (See page 267.)
 Ad-el-ite—See Adams & Elting Co.
 All-In-One—See Scientific Mfg. Co.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O.
 American Laboratories, Inc., 296 Boylston St., Boston, Mass. "Carbon-Kill."
 American Sales Co., 1654-57 Monadnock Blk., Chicago, Ill. (Sole Distributors for M & S Chemical Co., Chicago, Ill.)
 Auto Products Mfg. Co., Buffalo, N. Y. "Kleen-R-Plug."
 Ball Products Co., 226 Bates St., Detroit, Mich.
 Be-Be-Co.—See Boston Blacking Co.
 Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla.
 Ben-Wat Corp., Jamesburg, N. J.
 Black Diamond—See Hanley & Howits.
 Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.
 Blood & Co., T. L., 413 Wacouta St., St. Paul, Minn.
 Blozout—See Wallace Mfg. Co.
 Blue Ribbon—See International Metal Polish Co.
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Bowes Co., Robert M., 124-26 E. Ohio St., Indianapolis, Ind. "Seal-Fast."
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Buffalo Specialty Co., Buffalo, N. Y. "Never-Knock." (See page 269.)
 Burnox Co., 6324 Greenfield Ave. (W. Allis), Milwaukee, Wis.
 "C-P" Chemical Co., 336 River St., Chicago, Ill. "Carbon-X."
 Car-Bo-Dean Mfg. Co., 329 Chestnut St., St. Louis, Mo.
 Carbo-Gas Co., 205 Huron St., Toledo, O.
 Carbo-Klean—See Permatex Co.
 Carbocide—See Van Cleef Bros.
 Carbolax—See Lindsay, McMillan Co.
 Carbolide Chemical Co., Monrovia, Md.
 Carbon-X—See "C-P" Chemical Co.
 Carbon Cleaning Compound Co., 901 N. Euclid Ave., St. Louis, Mo. "Four Sees."

Carbon-Kill—See American Laboratories, Inc.
 Carbonox—See Northwestern Chemical Co.
 Carbonsolve—See Rust-Off Mfg. Co.
 Chalmers Chemical Co., 115 Chestnut St., Newark, N. J. "Phenoid."
 Chemical Specialties Co., 327 S. W. Blvd., Kansas City, Mo. "Wallina."
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)
 Cook Geo. E., 360 Amsterdam Ave., New York, N. Y.
 Crystal Oil & Paint Co., 6500 Detroit Ave., Cleveland, O.
 Day & Co., James B., 224-26 W. Superior St., Chicago, Ill.
 Denegre Baked Enamel Remover Co., 1922-24 Ave. F., Birmingham, Ala.
 Detroit White Lead Works, 1960 Milwaukee Ave., E. Detroit, Mich.
 Diamond—See Nu-Back Mfg. Co.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 E-Fec-Tiv—See Permatite Mfg. Co.
 Elgin Motor Power Mfg. Co., 416 Third Ave., Cedar Rapids, Iowa. "Torpedo."
 Expello—See Teaness Products Co.
 Famco—See Mears Chemical Co.
 Fearless Sales Co., 307 14th St., Denver, Colo.
 Fiebing Chemical Co., 233-40 Reed St., Milwaukee, Wis. "Victor."
 Four Sees—See Carbon Cleaning Compound Co.
 Franklin Distributing Co., 148 Elmwood Ave., Buffalo, N. Y.
 Franklin Mfg. Co., 354 Mortimer St., Buffalo, N. Y. (See page 643.)
 French Compression Fluids Co., Pasadena, Cal.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Magic," "Wonder Worker." (See page 655.)
 Hanley & Howits, 1535 W. Indiana Ave. (N. Phila.), Philadelphia, Pa. "Black Diamond"
 Hart-Bell Co., 48 S. Water St., Poughkeepsie, N. Y.
 Hollingshead Co., A. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Instant Products Co., 21 Cambria St., Boston, Mass.
 International Metal Polish Co., Quill St., Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Interstate Mfg. Co., Wollaston, Mass. "H. B."
 Jewel—See Wadsworth-Hoiland Co.
 Johnson & Son, S. C., 1013 16th St., Racine, Wis.
 Karbon Killer—See Ohio Grease Co.
 Karbon Klene Co., 227 S. Front St., Philadelphia, Pa.
 Kimo Mfg. Co., 2665 Main St., Buffalo, N. Y.
 Kleen-R-Plug—See Auto Products Mfg. Co.
 Koppax—See Koppers Products Co.
 Koppers Products Co., 356 Union Ave., Pittsburgh, Pa. "Koppax."
 Kwik-Ak-Shun—See United States Products Co.
 Liberty Chemical Works, Chicago, (See page 783.)
 Lindsay, McMillan Co., 242 Broadway, Milwaukee, Wis. "Mac Lins."
 M. H. B.—See Interstate Mfg. Co.
 M & S Chemical Co.—See American Sales
 McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
 Mac Lins—See Lindsay, McMillan Co.
 Magic—See Hall-Thompson Co.
 Mansfield Mfg. Corp., 822 S. Clinton St., St. Louis, Mo. "Four Sees."

Everything is listed under the NOUN or principal word

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COMPOUNDS, Carbon Removing (Continued)

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
 Mears Chemical Co., Frank A., 63 Biltmore Ave., Asheville, N. C. "Famco."
 Mingo Products Co., 537 Rosedale St., (Wilkinsburg) Pittsburgh, Pa.
 Mid West Co., 30 Ionia Ave., S. W., Grand Rapids, Mich.
 Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radiata."
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
 Monox—See Monoxide Co. of America.
 Monoxide Co. of America, 1367 Gratiot Ave., Detroit, Mich. "Monox."
 Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
 Motor Klean Co., 647 Third Ave., New York, N. Y.
 Munger Products Co., 220 Fifth Ave., New York, N. Y. "Wundr."
 Nacto Cleaner Corp., 2171-73 Madison Ave., New York, N. Y.
 Nation Co., 332 W. 16th St., Los Angeles, Cal.
 Never-Knock—See Buffalo Specialty Co.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Carbonox." (See page 275.)
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Diamond."
 NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 Ohio Grease Co., Rex 21, Loudonville, O. "Karbon-Killer." (See page 269.)
 Opco—See World Oil Products Co.
 Organic Products Corp., 301 Liberty St., Schenectady, N. Y.
 Orient Chemical Co., Gumbel Bldg., Kansas City, Mo.
 Peerless—See Columbus Varnish Co.
 Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 623.)
 Permatex Co., Sheepshead Bay, N. Y. "Carbo-Klean." (See page 277.)
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Phenold—See Chalmers Chemical Co.
 Price, Roy D., Waggoner, Ill. "R-D-P."
 Pruden Chemical Co., 2401 W. Washington Blvd., Chicago, Ill.
 Quickwork—See Standard Varnish Works.
 R-D-P—See Price, Roy D.
 Radium—See Milwaukee Auto Specialty Co.
 Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo.
 Rie-Nie—See Durkee-Atwood Co.
 Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y. "Carbonsolve."
 Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."
 Seal-Fast—See Bowes Co.
 Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
 Sterno Corp., New York, N. Y. (See page 269.)
 "Sure Shot" Carbon Remover Co., 643 N. 29th St., Louisville, Ky.
 Teaness Products Co., Nyack, N. Y. "Expello."
 Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn.
 Torpedo—See Elgin Motor Power Mfg. Co.
 Twin City Varnish Co., 208 N. Wabash Ave., Chicago, Ill. "Twincoc."
 Twincoc—See Twin City Varnish Co.
 United States Products Co., Highland Bldg., Pittsburgh, Pa. "Kwik-Ak-Shun."
 Van Cleaf Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Carbocide."

Victor—See Fiebing Chemical Co.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Wallace Mfg. Co., 239 Halsey St., Newark, N. J. "Blozout."
 Wallins—See Chemical Specialties Co.
 Whiz—See Hollingshead Co.
 Wilson-Imperial Co., 115 Chestnut St., Newark, N. J.
 Wonder Worker—See Hall-Thompson Co.
 Worko Co., Sattley Bldg., Racine, Wis.
 World Oil Products Co., 1426 Seneca St., Buffalo, N. Y. "Opco."
 Wundr—See Munger Products Co.
 Zim Mfg. Co., 208 N. Wabash Ave., Chicago, Ill.

COMPOUNDS, Case Hardening

Achilles—See Houghton & Co.
 Atlas—See European Color & Chemical Co.
 Bell & Gossett Co., 117 N. Dearborn St., Chicago, Ill. "Caseite."
 Black Diamond—See Rogers & Hubbard Co.
 Blaisch Co., Alfred O., 1956 Clybourn Ave., Chicago, Ill. (See page 271.)
 Bohnite—See Case Hardening Service Co.
 Buchanan Chemical Co., C. G., Baker Ave., Cincinnati, O. "Ferro-Case."
 Buchanan Co., Thos., 29 W. Third St., Cincinnati, O. "Case-Hardo."
 Bull Dog—See Rodman Chemical Co.
 Carbo—See Rodman Chemical Co.
 Carbonit—See Springfield Facing Co.
 Case Hardening Service Co., 2279 Scranton Rd., Cleveland, O. "Bohnite."
 Case-Hardo—See Buchanan Co.
 Caseite—See Bell & Gossett Co.
 Deeds Commercial Laboratories, 2150 Montcalm St., Indianapolis, Ind. "Grit."
 Excelsior—See European Color Chemical Co.
 European Color & Chemical Co., 18th St. & Park Ave., Weehawken, N. J. "Atlas."
 "Excelsior."
 Ferro Case—See Buchanan Chemical Co.
 Grit—See Deeds Commercial Laboratories.
 Haffleigh & Co., Cambria & American Sts., Philadelphia, Pa.
 Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa. "Achilles," "Pearlite."
 Ideal Case-Hardening Compound Co., 107 Water St., New York, N. Y.
 Kalux—See Metal Hardening Solution Co.
 Keystone—See Rodman Chemical Co.
 Metal Hardening Solution Co., 13 Banker Pl., Rochester, N. Y. "Kalux."
 Montgomery Chemical Works, Elmtree & Doremus Sts., Detroit, Mich.
 Mosso Laboratories, C. A., 2253 Warren Ave., Chicago, Ill.
 Park Chemical Co., Detroit, Mich. "Wood-sides." (See page 271.)
 Pearlite—See Houghton & Co.
 Pettinos, Charles E., 25 Church St., New York, N. Y.
 R & H—See Roessler & Hasslacher Chemical Co.
 Rodman Chemical Co., Verona, Pa. "Carbo," "Keystone," "Bull Dog." (See page 270.)
 Roessler & Hasslacher Chemical Co., 100 William St., New York, N. Y. "R & H."
 Rogers & Hubbard Co., Middletown, Conn. "Black Diamond."
 Springfield Facing Co., 317 Main St., Springfield, Mass. "Carbonit."
 Steco—See Steel Treating Equipment Co.
 Steel Treating Equipment Co., 7939-99 Lafayette Blvd., W., Detroit, Mich. "Steco."
 Woodsides—See Park Chemical Co.

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COMPOUNDS, Chemical Plating(See also *Pollacks, Metal*; also *Enamels, Brass*)

Arnold, N. B., 1 Sigmoury St., Brooklyn, N. Y.
 "Silkup."
 Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Silver Quick."
 (See page 279.)
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Eastern Rubber Co., Penna. Ave. & Brown St., Philadelphia, Pa. "Magic."
 Forest City Sales Co., Fremont, Neb. "Quick Knick."
 Justice Co., A. R., 617 Chestnut St., Philadelphia, Pa. "U-Kan-Plate."
 Magic—See Eastern Rubber Co.
 Naspel—See National Silver Plating Laboratories.
 National Silver Plating Laboratories, 410 Lafayette St., New York, N. Y. "Naspel."
 Quick Knick—See Forest City Sales Co.
 Rie-Nie—See Durkee-Atwood Co.
 Silver Quick—See Atlas Auto Supply Co.
 Silkup—See Arnold, N. B.
 U-Kan-Plate—See Justice Co.

COMPOUNDS, Core

Ebony—See Hill & Griffith Co.
 Glutrin—See Robeson Process Co.
 Hill & Griffith Co., C. H. & D. Ry. & Gast St., Cincinnati, O. "Ebony," "Linoline."
 King Kore Compound—See Stevens, Frederic B.
 Linoline—See Hill & Griffith Co.
 McCormick Co., J. S., 2428-36 Railroad St., Pittsburgh, Pa.
 Mills Mfg. Co., H. E., 263 Walton St., Syracuse, N. Y.
 Robeson Process Co., 13 E. 41st St., New York N. Y. "Glutrin."
 Stevens, Frederic B., Third & Larned Sts., Detroit, Mich. "King Kore Compound."
 Swan & Finch Co., 165 Broadway, New York, N. Y.

COMPOUNDS, Gasoline Treating

Aksala—See Killen Kemical Co.
 Alverd Sales Co., 80 Terrace, Buffalo, N. Y.
 American Laboratories, Inc., 296 Boylston St., Boston, Mass. "Auto-Pep."
 American Sales Co., Haverhill, Mass. "Kar-Bon-Ex."
 Auto-Pep—See American Laboratories, Inc.
 Boggs Co., Kirk A., Fort Dodge, Iowa. "Gas-O-Life."
 Bush Chemical Co., St. Louis, Mo.
 Car-Bon-Ale Co., Lincoln, Neb.
 Carbo-Line Co., Hastings, Neb.
 Carbonvoid—See Lloyd's of America.
 Chemical Reduction Co., 88 Broad St., Boston, Mass. "Pep-O."
 Culco—See Culmer Chemical Co.
 Culmer Chemical Co., 210 North St., Independence, Kans. "Culco."
 Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa. "Xylogen."
 Desmond Mfg. Co., B. G., 345 Atlantic Ave., Brooklyn, N. Y. "Miracle."
 Eccolene Co., Detroit, Mich.
 Econ-O-Kleen Fuel Co., 105 Labree Ave., Thief River Falls, Minn.
 Fry Mfg. Co., S., 1024 Perry St., Spokane, Wash. "Hi-Life."

Fueline Co., 188 Market St., Newark, N. J.
 Gas-Aid—See Hy-Klas Auto Products Co.
 Gas-Zip—See Sealer Distributing Co.
 Gas-O-Life—See Boggs Co.
 Gastine Co., Bridgeton, N. J.
 Go Gas, 42d St. & Lexington Ave., New York, N. Y.
 Gorilla—See McCandless & Son Mfg. Co.
 Hi-Life—See Fry Mfg. Co.
 Hy-Klas Auto Products Co., Jackson, Mich. "Gas-Aid."
 Inajiff Mfg. Co., Walsh Bldg., Akron, O.
 Kar-Bon-Ex—See American Sales Co.
 Karbonoid Chemical Co., 318 East Ave., Elyria, O.
 King, L. Gerald, 21 Pine St., Deposit, N. Y.
 Lewis Tool Co., 612 Fifth Ave. S., Minneapolis, Minn. (Sole Distributors for Oxygen Products Co., Thief River Falls, Minn. "Oxo.")
 Lighty Specialty Co., Kearney, Nebr. "Lisco."
 Lisco—See Lighty Specialty Co.
 Lloyd's of America, Bradley Beach, N. J. "Carbonvoid."
 Lot-A-Pep—See Panvar Co.
 Lowe Mfg. Co., J. H., Auburn Rd., Seneca Falls, N. Y.
 McCandless & Son Mfg. Co., A. C., 412 N. Market St., Wichita, Kans. "Gorilla."
 Mercier, Paul, 907 John St., Utica, N. Y.
 Miller Co., Frank, 349-51 W. 26th St., New York, N. Y. "Oxigene."
 Miracle—See Desmond Mfg. Co.
 Miracle Mfg. Co., Toledo Factories Bldg., Toledo, O.
 Mergo Oil Co., White Bldg., Buffalo, N. Y.
 Mormiles Co., 416 Sherman St., Chicago, Ill.
 Moto Whiz—See Ray Mfg. Co.
 Motorkool Oil Co., 20 E. Jackson Blvd., Chicago, Ill.
 Motor-Pep—See Utilities Co.
 Motor Run Oil Co., 9 E. 15th St., Brooklyn, N. Y.
 Motorlife Mfg. Co., 955-57 Poplar Ave., Memphis, Tenn.
 Nitol Motor Products Co., 68 Orchard St., Newark, N. J.
 Nitro—See Nitroline Products Co.
 Nitroline Products Co., 1763 Broadway, New York, N. Y. "Nitro."
 Oxigene—See Miller Co.
 Oxo—See Lewis Tool Co.
 Oxygen Products Co., Thief River Falls, Minn. "Oxo."
 Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Lot-A-Pep."
 Pep-O—See Chemical Reduction Co.
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn.
 Pierce Products Co., Buffalo, N. Y.
 Power Gas Products Co., 2321 Stevens Ave., Minneapolis, Minn.
 Ray Mfg. Co., 1637 Columbia Ave., Philadelphia, Pa. "Moto Whiz."
 Red Devil Mfg. Co., 2307 Locust St., St. Louis, Mo. "Speedo."
 Sales Service Co., 13 Water St., New York, N. Y.
 Sealer Distributing Co., 80 E. Jackson St., Chicago, Ill. "Gas-Zip."
 Speedo—See Red Devil Mfg. Co.
 Speedolene Co., Dallas, Texas.
 Tankil Chemical Sales Co., 224 High St., Cleveland, O.
 Utilities Co., Citizens Bldg., Cleveland, O. "Motor-Pep."
 Wizard Products Co., Buffalo, N. Y.
 Xylogen—See Dealers Motor Supply Corp.

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COMPOUNDS, Glass Windshield

(For keeping glass clear in rain or fog; for mechanical cleaners—See Cleaners, Glass Windshield)

Alder Chemical Co., 135 Washington St., Mt. Vernon, N. Y. "Star Clean."
 All-In-One—See Scientific Mfg. Co.
 B. J. S. Products Co., 35 Liberty St., New York, N. Y. "Letterrain."
 Bear Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla. "Clearite."
 Becker, John D., Gettysburg, Pa. "Magic Cloth."
 Ben-Wat Corp., Jamesburg, N. J.
 Blue Ribbon—See International Metal Polish Co.
 C-Clear—See Neu Metal Products Corp.
 Clear-Site—See Wa-Po Products Co.
 Clear Vision—See Safety Storage Co.
 Clear Vision—See Racine Accessories Mfg. Co.
 Clearite—See Bear Cat Products Co.
 Clerglas Chemical Co., 40 State St., Rochester, N. Y.
 Cleroline Chemical Co., 503 Fifth Ave., New York, N. Y.
 Cleveland Presto-Cloth Co., 1401 E. 93d St., Cleveland, O.
 Conservation Products Co., 221 W. Fifth St., Los Angeles, Cal. "Security."
 Cook, J. J., 403 Grand Ave., Milwaukee, Wis.
 Crystal-On Chemical Co., Charleston, S. C.
 Davis Chemical Mfg. Co., 306 Warren Ave., Brookton, Mass. "Frakto-Kloth."
 Durkee-Atwood Co., 49 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Evva-Kleer Specialty Co., 186 Remsen St., Brooklyn, N. Y.
 Fog-O-Lite—See National Chemical Co.
 Forbes Co., Benjamin P., 409 Superior Ave., N. W., Cleveland, O. "Glasbrite."
 Frakto-Kloth—See Davis Chemical Mfg. Co.
 Gastine Co., Bridgeton, N. J.
 Glasbrite—See Forbes Co.
 Greb Co., 195 State St., Boston, Mass. (See page 667.)
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 655.)
 Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whiz."
 International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Letterrain—See B. J. S. Specialty Co.
 Magic Cloth—See Becker, John D.
 Miracle Mfg. Co., Toledo Factories Bldg., Toledo, O.
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y. "See Clear."
 Mosher, J. H., 23 Walnut St., Seneca Falls, N. Y. "Sturm Wrag."
 National Chemical Co., Canal Fulton, O. "Fog-O-Lite."
 Neu Metal Products Corp., 247 Water St., Binghamton, N. Y. "C-Clear."
 Racine Accessories Mfg. Co., 14th & Clark Sts., Racine, Wis. "Clear Vision."
 Rainy Racer Co., 3-5 E. Redwood St., Baltimore, Md.
 Rie-Nie—See Durkee-Atwood Co.
 Safety Storage Co., 700 Central Ave., Minneapolis, Minn. "Clear Vision."
 Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."
 Security—See Conversation Products Co.
 See Clear—See Mirrolike Mfg. Co.
 Star Clean—See Alder Chemical Co.

Sturm Wrag—See Mosher, J. H.
 Usaco—See Unique Auto Specialties Co.
 Unique Auto Specialties Co., 280 Golden Gate Ave., San Francisco, Cal. "Usaco."
 Wa-Po Products Co., 111 W. South Water St., Chicago, Ill. "Clear-Site."
 Whiz—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.

COMPOUNDS, GRINDING—See Compounds, Valve Grinding; also Compounds, Bearing Grinding

COMPOUNDS, HARDENING—See Compounds, Case Hardening

COMPOUNDS, LUMINOUS—See Paints, Luminous

COMPOUNDS, PHOSPHORESCENT—See Paints, Luminous

COMPOUNDS, PLATING—See Compounds, Chemical Plating

COMPOUNDS, POLISHING—See Compounds, Buffing and Polishing

COMPOUNDS, Puncture Sealing

(For use in pneumatic tires for automatically sealing small leaks resulting from punctures)

Alcemo Mfg. Co., 20 Bridge St., Newark, N. J. "Kor-Ker."
 American Automotive Accessory Co., 917 Van Ness Ave., San Francisco, Cal.
 Auto Necessities Co., Austin, Minn.
 Blau, Jacob B., 622 N. Connecticut Ave., Atlantic City, N. J.
 Blu-Devi—See Swan Mfg. Co.
 Cat-Nak Co., 1631 N. Wells St., Chicago, Ill.
 Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Tyre Lyte."
 Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa.
 Fry Mfg. Co., S. 1024 Perry St., Spokane, Wash.
 Gee-Bee—See Green Bay Supply Co.
 Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."
 Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whiz."
 Kor-Ker—See Alcemo Mfg. Co.
 National Tire Seal Co., 923 Washington Ave., S., Minneapolis, Minn.
 Nu-Way Puncture Cure Co., 224 Pine St., Green Bay, Wis.
 Plugit Co., Florence, S. C.
 Ray Mfg. Co., 1627 Columbia Ave., Philadelphia, Pa. "Rayseal."
 Rayseal—See Ray Mfg. Co.
 Relax Co., 2113 Monroe Ave., Norwood, O.
 Swan Mfg. Co., Lima, O. "Blu-Devi."
 Tube Mfg. Co., 610 N. Vandeventer Ave., St. Louis, Mo.
 Tyre Lyte—See Dannenhirsch Co.
 Whiz—See Hollingshead Co.

COMPOUNDS, Radiator Cleaning

(For Radiator Cement—See Cement, Radiator)

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)
 Ad-el-ite—See Adams & Elting Co.
 All-In-One—See Scientific Mfg. Co.
 Corol Co., 127 N. Dearborn St., Chicago, Ill.

Everything is listed under the NOUN or principal word



Se-Ment-Ol
(Liquid or Powder)

A radiator repairer that finds leaks readily and fixes them permanently. One 75c can will repair the largest cooling system. Prices: List price per can, 75c. Packed 13 in carton, \$9.00; dealer's net price, \$5.40 per carton.



Mohair Top Dressing and Lining Dye

Penetrates and waterproofs the fabric. Prices, pints, 85c. Carton of 12, list price, \$10.20; dealer's net price, \$6.63 per carton. Quarts, \$1.50. Carton of 12, list price, \$18.00; dealer's net price, \$11.70 per carton.



Valve Grinding Compound

In famous three-and-one can—3 oz. coarse, 1 oz. fine. Free from ground glass or emery. Price, per 4 oz. can, 45c. Carton of 12—List price, \$5.40; dealer's net price, \$3.34 per carton. One lb. can, price, \$1.25. Carton of 12—List price, \$12.00; dealer's net price, \$8.00 per carton.

WANTED!

There are few products on the market as much in demand as the standard NORWESCO line of "chemically correct" utilities. Stocking one universally accepted line, and eliminating slower selling makes, means less money tied up in stock, bigger profit on a smaller investment and a quicker turnover.

You make no mistake in choosing NORWESCO products—they give you and your trade most value for the money. Get acquainted with them *today!*

Ask Your Jobber or Write to Us for Full Particulars

There's a NORWESCO product for every need

Se-Ment-Ol Radiator Cement
(Liquid or Powder)

Carbonox Carbon Remover.

Never-Burn Engine Enamel.

Tire Lac Tire Paint.

Norwesco Rim and Gasket Shellac.

Norwesco Neatsfoot Clutch and Brake Compound.

Norwesco Automobile and Furniture Polish.

Norwesco Color Varnishes.

Norwesco Mechanic's Blue.

Norwesco Soldering Paste.

Norwesco Pumice Hand Soap.

Norwesco Rim Graphite Coating.

Norwesco Iron Cement.

Norwesco Soldering Salt.

NORWESCO Khaki Top Dressing and Lining Dye.

THE NORTHWESTERN
CHEMICAL CO.

785 State Street
Marietta, Ohio

Canadian Factory:
Toronto



Utility Black

An air-drying enamel for metal parts. Half pint, 80c. Carton of 12, list price, \$7.20; dealer's net price, \$4.68 per carton. Price, pints, \$1.00. Carton of 12, list price, \$12.00; dealer's net price, \$7.60 per carton. Quarts, \$1.75. Carton of 12, list price, \$21.00; dealer's net price, \$13.65 per carton.



Leather Pantasote Top and Upholstery Dressing

Waterproofs and preserves. Price, pints, 85c. Carton of 12, list price, \$10.20; dealer's net price, \$6.63 per carton. Quarts, \$1.50. Carton of 12, list price, \$18.00; dealer's net price, \$11.70 per carton.



Skalex

Removes all lime, rust and sediment. Prevents overheating—cannot injure the radiator. Price, per 4 oz. can, 75c. Packed 12 in carton—List price, \$9.00; dealer's net price, \$5.40 per carton.

Please mention The Automobile Trade Directory

COMPOUNDS, Radiator Cleaning (Continued)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Dutch—See Van Cleef Bros.
 Elder Mfg. Co., 2305 N. Illinois St., Indianapolis, Ind. "Radio."
 Field Auto Compound Mfg. Co., Auburn, Mo.
 Fluff-Foe—See Garratt-Callahan Co.
 Fresalene Mfg. Co., 32-40 S. Clinton St., Chicago, Ill.
 Garratt-Callahan Co., 37 S. Clinton St., Chicago, Ill. "Fluff-Foe."
 Gee-Bee—See Green Bay Supply Co.
 Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Gee-Bee."
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker."
 (See page 655.)
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Karbonoid Chemical Co., 313 East Ave., Elyria, O. "No-Rust-O."
 No-Rust-O—See Karbonoid Chemical Co.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Skalex." (See page 275.)
 Opco—See World Oil Products Co.
 P & R Auto Specialty Mfg. Co., 1660 Eastern Parkway, Brooklyn, N. Y. "Two Star." (See page 279.)
 Perma-Lee Mfg. Co., Wilkes-Barre, Pa. (See page 623.)
 Radio—See Elder Mfg. Co.
 Rie-Nie—See Durkee-Atwood Co.
 Scientific Mfg. Co., 426 Prospect Ave., Scranton, Pa. "All-In-One."
 Skalex—See Northwestern Chemical Co.
 Sutherland & Co., P., 232 Milk St., Boston, Mass. "Velvet."
 Tubo Mfg. Co., 611 N. Vandeventer Ave., St. Louis, Mo.
 Two Star—See P & R Auto Specialty Mfg. Co.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Velvet—See Sutherland & Co.
 Whiz—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.
 World Oil Products Co., 1426 Seneca St., Buffalo, N. Y. "Opco."
 Young & McBride, Catsauqua, Pa.

COMPOUNDS, RADIATOR SEALING —

See Cement, Radiator Repair

COMPOUNDS, Rust Preventing and Removing

American Chemical Paint Co., 273 E. Jefferson St., Detroit, Mich. "Deoxidine," "Deoxylite." (See page 263.)
 American Rust Proof Co., 8 W. 40th St., New York, N. Y. "Vatudrip."
 Berry Bros., 211 Lieb St., Detroit, Mich. "Raven."
 Bradford Oil Co., 152 Pleasant St., Lynn, Mass. "Cedaroleum."
 Cedaroleum—See Bradford Oil Co.
 Conversion Products Corp., Canadian-Pacific Bldg., New York, N. Y. "Stazon."
 Corol Co., 127 N. Dearborn St., Chicago, Ill.
 Dearborn Chemical Co., 332 S. Michigan Ave., Chicago, Ill. "No-Ox-Id."
 Deoxidine—See American Chemical Paint Co.
 Deoxylite—See American Chemical Paint Co.
 Flske Bros. Refining Co., 24 State St., New York, N. Y.

Gramoline Co., Lumber Exchange Bldg., Chicago, Ill. "Rusticene."
 Karbonoid Chemical Co., 313 East Ave., Elyria, O. "Non-Rustine."
 Meno—See Sinclair Co.
 No-Ox-Id—See Dearborn Chemical Co.
 Non-Rustine—See Karbonoid Chemical Co.
 Oakley Chemical Co., 22 Thames St., New York, N. Y. "Oakite."
 Oakite—See Oakley Chemical Co.
 Parker Rust Proof Co., 2177 Milwaukee Ave., Detroit, Mich.
 Permatex Co., Sheepshead Bay, N. Y. "Solvo-Rust." (See page 277.)
 Polygon Products Co., 141 Milk St., Boston, Mass. "Tasgon." (See page 271.)
 Raven—See Berry Bros.
 Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y.
 Rust Products Co. of America, 64 E. Lake St., Chicago, Ill. "Rustsolvo."
 Rust Proof Mfg. Co., 1779 Atlantic Ave., Brooklyn, N. Y.
 Rusticene—See Gramoline Co.
 Rustsolvo—See Rust Products Co. of America.
 Sinclair Co., A. C., 2430 Second Ave., New York, N. Y. "Meno."
 Solvo-Rust—See Permatex Co.
 Stazon—See Conversion Products Co.
 Tasgon—See Polygon Products Co.
 Vatudrip—See American Rust Proof Co.

COMPOUNDS, SPOKE TIGHTENING—See Compounds, Wood Wheel Tightening

COMPOUNDS, STORAGE BATTERY TERMINAL—See Paints, Storage Battery Terminal

COMPOUNDS, Tar Removing

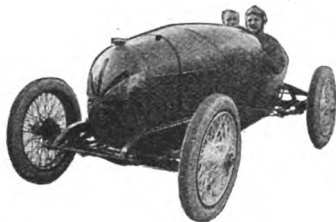
(For removing Tar or Road Oils from bodies)

Be-Be-Co.—See Boston Blacking Co.
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Cleveland Chemical Specialty Co., Hippodrome Bldg., Cleveland, O. "Kem-Ko."
 Cooper & Osterhout, 242 Vanduser St., Watertown, N. Y. "Tarof."
 Du Pont de Nemours & Co., E. I. (Chemical Products Division), Wilmington, Del.
 Em-C-Lac Co., Smith St., Far Rockaway, N. Y.
 Franklin Distributing Co., 148 Elmwood Ave., Buffalo, N. Y.
 Franklin Mfg. Co., 354 Mortimer St., Buffalo, N. Y. (See page 643.)
 Johnson & Son, S. C., 1012 16th St., Racine, Wis.
 Kem-Ko—See Cleveland Chemical Specialty Co.
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
 Magic—See Morse Co.
 Morse Co., L. E., 205 N. Hyde Park Ave., Scranton, Pa. "Magic."
 Nacto Cleaner Corp., 2171-73 Madison Ave., New York, N. Y.
 Noble Piano Co., 4841 Woodward Ave., Detroit, Mich. "Tar-Off."
 Permatex Co., Sheepshead Bay, N. Y. "Tarof." (See page 277.)
 Polygon Products Co., 141 Milk St., Boston, Mass. "Tarr-Gon." (See page 271.)
 Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y. "Tar-Off."

Everything is listed under the NOUN or principal word

PERMATEX FORM-A-GASKET

(PATENTS PENDING)



When men like these, who risk their lives in every race, use FORM-A-GASKET to get the highest efficiency out of their motors, you can rest assured FORM-A-GASKET is a material of great merit.

Tommy Milton, Jimmy Murphy, Roscoe Scales, Barney Oldfield, Louis Chevrolet, Ralph de Palma, Eddie Hearne, Ira Vail, Eddie Miller, Ralph Mulford, Howard Wilcox, Rene Thomas, Andre Boillot, Joe Boyer, Willie Haupt, Jean Chassagne, Frank Elliott, C. W. Van Ranst, Lora Coram.

QUESTIONS

1. WHAT IS FORM-A-GASKET?

FORM-A-GASKET is a gasket. It is in the form of a paste which you can apply with your finger. It contains various ingredients that make it withstand enormous pressure, very high heat and make it leakproof to gasoline, kerosene, grease, oil and water.

Because it is in paste form, it will fill every inequality in the surface on which it is applied, thus producing an absolutely leakproof union.

2. WHERE IS FORM-A-GASKET APPLIED?

FORM-A-GASKET is applied to all flange unions wherever a gasket or washer is required.

Except on the most expensive engines, surfaces that have to be bolted together, are not ground so perfectly that gasoline, kerosene, grease, oil, water, or gas in vapor form, will not leak out. Gaskets or washers are therefore used between the surfaces to be united, so a tighter union can be obtained.

FORM-A-GASKET can be used either alone, or it may be applied on top of new or old gaskets.

3. HOW MUCH HEAT WILL FORM-A-GASKET RESIST?

FORM-A-GASKET will resist all the heat that is generated in the cylinder head of any engine and some repair men state that they have used FORM-A-GASKET successfully on exhaust manifold connections.

4. CAN FORM-A-GASKET BE USED ON WARPED CYLINDER HEADS?

Eddie Hearne used FORM-A-GASKET on the warped cylinder head of his racing car, and it held perfectly thruout a 250 mile race.

B. W. Berg of the Duluth Auto Supply Co., Duluth, Minn., saved \$500 by repairing a cracked Marmon six cylinder block, with FORM-A-GASKET.

G. F. Kight, auto repair man, Norfolk, Va., saved \$750 on a warped "Cole 8" engine by making a permanent repair with FORM-A-GASKET.

William O. Giblin, automobile engineer of Brooklyn, N. Y., has repeatedly made permanent repairs of warped cylinder heads with FORM-A-GASKET, where the ordinary solid gasket would not hold.

5. WILL FORM-A-GASKET HOLD HIGH PRESSURE?

Mr. Fred Duesenberg, builder of the famous Duesenberg Motors, uses FORM-A-GASKET on cylinder

heads of his motors, developing 95 H. P. at 3700 R. P. M.

Tommy Milton used FORM-A-GASKET on his 16 cylinder Duesenberg, when he made a world's record of one mile in 23 seconds.

Ralph Mulford used FORM-A-GASKET on his Paige, when making a world's stock chassis record of one mile in 35 seconds.

6. IS FORM-A-GASKET GASOLINE PROOF?

FORM-A-GASKET is absolutely leakproof to gasoline. All unions thru which gasoline flows, should be sealed with FORM-A-GASKET.

Many repair men instead of soldering leaky gasoline tanks, now make a permanent repair in a few minutes by coating with FORM-A-GASKET, the inside of the tank, where it is cracked.

Several firms manufacturing carburetors, supply their customers with tubes of FORM-A-GASKET, directing that this product be used when placing their carburetors in position.

7. IS FORM-A-GASKET OIL PROOF?

FORM-A-GASKET will give absolutely oil-tight unions on gear case covers, transmission bell housings, crank case covers, oil drain plugs, inspection hole covers, differential housings, starter gear and starter chain housings, front end chain case housings, valve cover hand hole plates, etc.

For the above work it can be used alone, or on top of old or new gaskets of any type.

Cracked crank case covers can be made oil tight by coating the inside with FORM-A-GASKET.

8. IS FORM-A-GASKET WATER PROOF?

It is an ideal seal for connecting up rubber hose to metal pipe lines.

FORM-A-GASKET is also used on all flanges and screw thread connections coming in contact with flowing water, such as water pump housings, water manifold heads, radiator inlet and outlet flanges.

9. OF WHAT IMPORTANCE IS FORM-A-GASKET TO SPARK EFFICIENCY?

FORM-A-GASKET, as has been stated is absolutely oil-proof. Commutator wires on most motors, become oil soaked and short circuited, causing the engine to "miss."

By coating the commutator wires with FORM-A-GASKET, short circuiting of the spark system is prevented.



FORM-A-GASKET is one of a complete line of automobile repair materials.

Manufactured by

PERMATEX COMPANY, Inc.

SHEEPSHEAD BAY, N. Y.

Send for 1922 Catalogue

Please mention The Automobile Trade Directory

COMPOUNDS, Tar Removing (Continued)

Sanozone Chemical Co., 5 N. 20th St., Philadelphia, Pa.
 Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill.
 Solene Products Co., Perkaspie, Pa.
 Tar-Off—See Noble Piano Co.
 Tar-Off—See Rust-Off Mfg. Co.
 Taroff—See Cooper & Osterhout.
 Taroff—See Permatex Co.
 Tarr-Gon—See Polygon Products Co.

COMPOUNDS, Tire Filling

(Rubber or composition filling for Pneumatic Tires to be used in place of air)

Aero-Cushlon Inner Tire & Rubber Co., Genesee Ave., Saginaw, Mich.
 Aero Cushlon Tire Co., 525-27 W. Santa Clara St., San Jose, Cal.
 Alastic Tire Cushlon Co., 1419-21 Locust St., St. Louis, Mo.
 Burgess Tire Co., 15th & Troost St., Kansas City, Mo.
 Carter-Bell Mfg. Co., Morris Ave., Millburn, N. J.
 Cut Weld—See Keystone Rubber Mfg. Co.
 Dahl Punctureless Filler & Rim Co., 1424-26 Hennepin Ave., Minneapolis, Minn.
 Elgin Rubber Ace Co., Elgin, Ill.
 Essenkay Products Co., 2601-09 Cottage Grove Ave., Chicago, Ill.
 Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Cut Weld."
 National Rubber Filler Co., 210 Main St., Midlothian, Tex.
 National Synthetic Rubber & Tire Co., 2 Rectory St., New York, N. Y. "Resilonite."
 National Tire Cushlon Co., 1511 McGee St., Kansas City, Mo.
 No-Mo Flat—See P & R Auto Specialty Mfg. Co.
 Resilonite—See National Synthetic Rubber & Tire Co.
 P & R Auto Specialty Mfg. Co., 1660 Eastern Parkway, Brooklyn, N. Y. "No-Mo Flat." (See page 279.)
 Universal Tire Filler Co., 441-43 Hawthorne Ave., Portland, Ore.

COMPOUNDS, Tire Preserving

(Chemical compound or paint for applying to tires to preserve the rubber—See also Paints, Rubber.)

Dees & Wheatley, 47 Main St., Midlothian, Tex.
 Kepuruber—See Rubber Preserving Co.
 Rubber Preserving Co., Otis Bldg., Chicago, Ill. "Kepuruber."
 Save-O Co., Asylum & Ann Sts., Hartford, Conn.

COMPOUNDS, Tire Repair

(For filling cuts in outer casing or shoes)

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Kutite."
 American Rubber & Tire Co., 100 Beech St., Akron, O. "Stickfast."
 Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Tire Doh." (See page 279.)

Boska—See Standard Tire Filler Co.
 C. O. T. Gum Gum—See Tingley & Co.
 Cut Weld—See Keystone Rubber Mfg. Co.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Eastern Rubber Co., Penna. Ave & Brown St., Philadelphia, Pa. "Magic."
 Ev-R-Wear—See Young Rubber Products Co.
 Firestone Tire & Rubber Co., Miller & Sweitzer Ave., Akron, O.
 Goodrich Co., B. F. S. Main St., Akron, O.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 655.)
 Henry's—See Perfectfix Rubber Co.
 Jiffy—See Johnstown Rubber Co.
 Johnstown Rubber Co., Johnstown, Pa. "Jiffy."
 Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Cut Weld."
 Kutite—See American Automobile Accessories Co.
 Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.
 Magic—See Eastern Rubber Co.
 Magic—See Morse Co.
 Mastic—See Michelin Tire Co.
 Mengo Products Co., 587 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.
 Michelin Tire Co., Milltown, N. J. "Mastic."
 Miller Rubber Co., Akron, O. "Pluggum."
 Morse Co., L. E., 205 N. Hyde Park Ave., Scranton, Pa. "Magic."
 National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Red Cross."
 Northwestern Chemical Co., 785 State St., Marietta, O. (See page 275.)
 Page-Lester Co., 2644 Indiana Ave., Chicago, Ill. "Tite-Wad."
 Perfectfix Rubber Co., Greenbay Rd., Milwaukee, Wis. "Henry's."
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn.
 Pluggum—See Miller Rubber Co.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa. "Quakerdo."
 Quakerdo—See Quaker City Rubber Co.
 Red Cross—See National Rubber & Specialties Co.
 Red X—See St. Louis Rubber Cement Co.
 Rie-Nie—See Durkee-Atwood Co.
 S-V—See Williams Mfg. Co.
 St. Louis Rubber Cement Co., 3046 Lombdin Ave., St. Louis, Mo. "Red X."
 Standard Tire Filler Co., 1400 Broadway, New York, N. Y. "Boska."
 Stickfast—See American Rubber & Tire Co.
 Swanson Supply Co., 2124 Westlake Ave., Seattle, Wash.
 Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J. "C. O. T. Gum Gum."
 Tire-Doh—See Atlas Auto Supply Co.
 Tire-Tite—See Vul-Tex Mfg. Co.
 Tite-Wad—See Page-Lester Co.
 Treado Mfg. Co., 43 Dwight St., Springfield, Mass.
 Two in One—See Van Cleef Bros.
 United States Tire Co., 1790 Broadway, New York, N. Y. (See page 863.)
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Two in One."
 Vul-Tex Mfg. Co., 140 E. Lake St., Minneapolis, Minn. "Tire-Tite."
 Williams Mfg. Co., 1800 Carman St., Camden, N. J. "S-V."
 Wonder Worker—See Hall-Thompson Co.
 Young Rubber Products Co., St. Louis, Mo. "Ev-R-Wear."

Everything is listed under the NOUN or principal word

There are Many "Tire Doughs" But Only One, Genuine Original

TIRE-DOH



Genuine TIRE-DOH outfit includes both TIRE-DOH and TIRE-DOH Cement. BOTH are necessary to get perfect results. Over 750,000 TIRE-DOH users—10,000 Dealers—prove the merits of the genuine TIRE-DOH.

Atlas Auto Supply Company
697 W. Austin Ave. Chicago, Ill.

"TIMESAVER"

BEARING COMPOUND

Sold by
Jobbers
Every-
where

Foreign
Representa-
tion
Wanted



Jobbers
and
Manufacturers'
Agents
Write
for
Proposition

"TIMESAVER" is the original Bearing Grinding Compound, manufactured under United States Letter Patents No. 1,381,728.

Manufactured by
M.T.K.PRODUCTS COMPANY
Seattle, Washington

CARBO
CASEHARDENING COMPOUND

Carbo Case Hardening Compounds cannot vary in quality. The composing elements are definitely known and sensitively proportioned.

Every shipment is alike. Every pill alike. Hence, case hardening results MUST be, and ARE, alike. This accounts for its continued use by those whose standards of results are the highest.

Rodman Chemical Company
Verona, Pa.

Trade

★ TWO STAR ★

Mark

P. & R. Auto Specialty Mfg. Co.
INCORPORATED

1660 EASTERN PARKWAY

Shipping Dept. 41 Watkins St., Brooklyn, N.Y.



Two Star
Radiator Compound



Two Star Rim and
Gasket Compound



Two Star
Shellac

No-Mo Flat

Tire Trouble Preventer

Radiator Compound and Liquid, which is clean and harmless, does wonders, and guaranteed. Hot Water and Steam Boiler No-Mo Leak. High Grade Rim and Gasket Shellac. Auto Body Polish. Non-Freezing Alcohol Solution.

Please mention The Automobile Trade Directory

COMPOUNDS, Valve Grinding*(Specially prepared abrasive compounds for grinding engine valves)*

- Auto Equipment Co., 32 Hollywood Ave., East Orange, N. J. "Eureka."
- Baum's Castorine Co., 104 N. George St., Rome, N. Y.
- Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
- Bridgeport Wood Finishing Co., New Milford, Conn. "Lithowhite."
- Carborundum Co., Niagara Falls, N. Y.
- Clover Mfg. Co., 410 Main St., Norwalk, Conn. (See page 281.)
- Cook, Geo. E., 360 Amsterdam Ave., New York, N. Y.
- Cyl-Lap Products Co., Seattle, Wash. (See page 281.)
- Day & Co., James B., 224-26 W. Superior St., Chicago, Ill.
- Diamond—See Hall-Thompson Co.
- Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
- Dutch—See Van Cleef Bros.
- E. Z.—See International Mfg. & Sales Co.
- E-Fec-Tiv—See Permatite Mfg. Co.
- Empire Specialty Co., E. Orange, N. J. "Rapidcut."
- Eureka—See Auto Equipment Co.
- Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for "Eureka" Compounds.) (See page 429.)
- Graham Roller Bearing Corp., Coudersport, Pa. (See page 110.)
- Grindan Mfg. Co., Albany, N. Y.
- Gryndyn—See Miller Co.
- Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Quick Kut," "Diamond." (See page 655.)
- Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
- Instant Products Co., 21 Cambria St., Boston, Mass.
- International Mfg. & Sales Co., 6304 Wallace St., Chicago, Ill. "E. Z.," "Peerless," "X. L."
- Jiffy—See Re-Nu-R Products Co.
- Johnson & Son, S. C., 1012 16th St., Racine, Wis.
- Lightning Mfg. Co., Cornish Flat, N. H.
- Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
- Linsco—See Lins Mfg. Co.
- Lithowhite—See Bridgeport Wood Finishing Co.
- M. & M. Mfg. Co., 7447 S. Chicago Ave., Chicago, Ill. (See page 591.)
- Mid West Co., 30 Ionia Ave., S. W., Grand Rapids, Mich.
- Miller Co., Frank, 349-51 W. 26th St., New York, N. Y. "Gryndyn," "Standard."
- Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
- Mohawk Grinding Paste Mfg. Co., Albany, N. Y.
- Nation Co., 332 W. 16th St., Los Angeles, Cal.
- National Valgrinok Co., 195 Church St., Newton, Mass. "Valgrinok."
- Nock Co., Geo. W., 1304-06 Race St., Philadelphia, Pa. (Sole distributors for Purfex Mfg. Co., Philadelphia, Pa.)
- Norwesco—See Northwestern Chemical Co.
- Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)
- O. K.—See Ideal Valve Grinder Co.
- Peerless—See International Mfg. & Sales Co.
- Pep—See Worcester Abrasive Co.
- Perma-Lee Mfg. Co., Wilkes-Barre, Pa. (See page 623.)
- Permatex Co., Sheepshead Bay, N. Y. (See page 277.)
- Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
- Pulvs—See Universal Products Co.
- Purfex Mfg. Co.—See Nock Co.
- Quick-Kut—See Hall-Thompson Co.
- Rapidcut—See Empire Specialty Co.
- Re-Nu-R Products Co., 308 E. Lake St., Minneapolis, Minn. "Jiffy."
- Rie-Nie—See Durkee-Atwood Co.
- S. & P. Mfg. Co., 255 W. 169th St., New York, N. Y.
- Standard—See Miller Co.
- Tungstom Mfg. Co., Marshalltown, Ia. (See page 647.)
- Universal Products Co., Jackson Bldg., Providence, R. I. "Pulvs."
- Valgrinok—See National Valgrinok Co.
- Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
- Volcano Mfg. Co., 923 W. 51st Pl., Los Angeles, Cal.
- Whiz—See Hollingshead Co.
- Wonder Worker—See Hall-Thompson Co.
- Worcester Abrasive Co., 1664 Broadway, New York, N. Y. "Pep."
- Zip Mfg. Co., Denver, Colo. (See page 281.)

COMPOUNDS, VULCANIZING—See Compounds, Tire Repair**COMPOUNDS, Welding**

- Anti-Borax Compounds Co., 1503 Wall St., Fort Wayne, Ind. "E-Z," "Crescent."
- Banner—See Cortland Specialty Co.
- Cortland Specialty Co., 174-78 Railroad St., Cortland, N. Y. "Banner."
- Cortland Welding Compound Co., Cortland, N. Y. "Weld-A-Cast."
- Crescent—See Anti-Borax Compounds Co.
- E-Z—See Anti Borax Compounds Co.
- Ever-Stay Sales Co., 1501 Jackson St., Omaha, Neb. (See page 453.)
- Krembs & Co., 173 N. Green St., Chicago, Ill. "Weldine."
- Sani Products Co., 209 W. Randolph St., Chicago, Ill.
- Tip-It, Inc., 120 Broadway, New York, N. Y.
- Weld-A-Cast—See Cortland Welding Compound Co.
- Weldine—See Krembs & Co.
- Whittaker, Clark & Daniels, 250 Front St., New York, N. Y.

COMPOUNDS, WHEEL TIGHTENING—See Compounds, Wood Wheel Tightening**COMPOUNDS, WIND SHIELD—See Compounds, Glass Wind Shield****COMPOUNDS, Wood Wheel Tightening***(For swelling and tightening loose spokes in wood wheels)*

- Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Never Creak." (See page 655.)
- Never-Creak—See Hall-Thompson Co.
- Spoktite—See Woodtite Laboratories.
- Wonder Worker—See Hall-Thompson Co.
- Woodtite Laboratories, Modesto, Cal. "Spoktite."

Everything is listed under the NOUN or principal word



Clover Grinding and Lapping Compound

Made in 8 Grades

- 3-A (Microscopic fine)
- 1-A (Very fine)
- A (Fine)
- B (Medium)
- C (Medium coarse)
- D (Coarse)
- E (Very coarse)
- No. 50 (Extra coarse)

One grade to the can

In ¼ lb., ½ lb., 1 lb., and 5 lbs.

Over 10,000,000 cans sold since 1907.

Recognized as the standard the world over for Valve Grinding, Cylinder Lapping, Fitting Piston Rings, etc.

Send for Free Instructional Bulletins: No. 75 on Valve Grinding; No. 80 on Cylinder Lapping, Fitting Rings, etc.; No. 90 on Shop Kinks.

For the Kit

Standard

4 oz.

Duplex Can

Containing equal parts grades D for roughing and A for finishing.

2 oz. Duplex Can

Same as 4 oz. can only smaller, now contains exactly the same materials as the 4 oz.



CLOVER MFG. CO., 410 Main St., NORWALK, CONN., U. S. A.

Branches: San Francisco and Chicago

A
B
S
O
L
U
T
E



R
E
M
O
V
A
L

Cyl-lap

Lapping compound is a fast cutting abrasive that will not deposit in metal.

It is for lapping cylinders, pistons and other hard metals.

Cyl-lap Products Co.

Manufacturers

SEATTLE : : : : WASH.



BEARING GRINDING COMPOUND

Saves 80% of the usual time consumed in scraping babbitt and bronze bearings and produces a far superior and more durable bearing surface.

"100%" is used and endorsed by many of the leading motor builders and prominent service organizations in the country.

"100%" is made in two grades, "fine" for finishing babbitt, and "coarse" for hard grades of babbitt also bronze bearings, wrist pin bushings, etc.

LIST PRICE

Single cans net weight 3 oz. each.....\$1.50

Packed in 6-oz. cartons, 24 cartons in wooden case

DISCOUNTS TO THE TRADE

If not stocked by your jobber write us direct, giving jobber's name.

RENREW PRODUCTS COMPANY

370 West 51st Street

New York City



"Ready Mixed"

ZIP Friction Paste Valve Grinding Compound

For Fitting in Bearings

You can now fit in bearings by hand in 1/10 the time for scraping by using ZIP Friction Paste. It works with water, runs freely from its tube and its friction is counteracted by oil.

ZIP Friction Paste comes in six-ounce tubes. A sample tube will be sent FREE. Write for it.

THE ZIP MANUFACTURING CO.
Denver, Colorado

THE ZIP ABRASIVE COMPANY
Cleveland, Ohio



(Trade-Mark Registered)

Please mention The Automobile Trade Directory

COMPRESSED AIR ENGINE STARTERS—

See Starters, Compressed Air Engine

COMPRESSING TOOLS—See Tools, Valve Spring Lifting and Compressing**COMPRESSION COUPLINGS—See Unions, Tubing****COMPRESSION GAGES—See Gages, Cylinder Compression****COMPRESSION METERS—See Gages, Cylinder Compression****COMPRESSION RELIEF COCKS—See Cocks; also Cups, Spring Key****COMPRESSION TANKS—See Tanks, Vacuum and Compression, Gasoline****COMPRESSION TESTERS—See Gages, Cylinder Compression****COMPRESSING WHISTLES—See Horns, Exhaust****COMPRESSORS, Garage Air**

A-F-S Machine Co., 518 S. St. Clair St., Toledo, O.

Acme Special Machine Mfg. Co., 14 Sigourney St., Hartford, Conn.

Air Compressor & Equipment Co., 46-48 Watomia St., San Francisco, Cal. "Liberty."

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

American Electric Air Pump Co., 220 Penn. Ave., Pittsburgh, Pa.

American Steam Pump Co., Maple St., Battle Creek, Mich.

Au-To Compressor Co., 308 S. Mulberry St., Wilmington, O. "Oro."

Baker-Hansen Mfg. Co., 744-58 23rd Ave., Oakland, Cal.

Bastian Auto Engineering Works, 134 Tabor Rd. (Olney), Philadelphia, Pa. "M. L. B."

Binks Spray Equipment Co., 3114-26 Carroll Ave., Chicago, Ill.

Black & Decker Mfg. Co., Towson Heights, Baltimore, Md. "Electroflater."

Brown Beer Pump Co., E. R., 11 Chardon St., Boston, Mass. "Success."

Brunner Mfg. Co., Utica, N. Y. (See pages 284 and 285.)

Caldwell, R. L., 74 Cortlandt St., New York, N. Y. "Quickflute."

Champion—See Cleveland Faucet Co.

Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.

Clayton—See International Steam Pump Co.

Cleveland—See National Motor Supply Co.

Cleveland Faucet Co., 708 Frankford Ave. N. W., Cleveland, O. "Champion."

Crawford, D. A., Emlenton, Pa.

Curtis Pneumatic Machinery Co., 1560 Kienlen Ave., St. Louis, Mo. (See page 283.)

Eureka Air Compressor Co., 242 Glenwood Ave., Bloomfield, N. J.

Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.

Faultless—See Vulcan Mfg. Co.

Fellbach Machine Works, 424 36th St., North Cedar St., Green Bay, Wis.

Fero Electric Air Pump Co., 509 Penwood Ave., Pittsburgh, Pa.

Franklin Auto Parts Co., Franklin, N. H. (Sole Distributors for Franklin Machine Co., Franklin, N. H.) (See page 718.)

Franklin Machine Co.—See Franklin Auto Parts Co.

Gardner Governor Co., Quincy, Ill.

Gasco Mfg. Co., Lancaster, Pa. "Twentieth Century."

General Utility Co., Stock Exchange Bldg., Philadelphia, Pa.

Gifford Engine Co., Lansing, Mich.

Globe Mfg. Co., 64 Grant St., Battle Creek, Mich. "Victory."

H-B—See Hobart Bros. Co.

Hale Electric & Engineering Co., Cleveland, O. (See page 155.)

Hartford Machine Screw Co., Hartford, Conn. "Master." (See page 741.)

Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.

Herr, 182 Locust St., New York, N. Y. "Tantem," "Minimax." (See page 682.)

Hobart Bros. Co., Troy O. "H-B."

Imperial—See Ingersoll-Rand Co.

Ingersoll-Rand Co., 11 Broadway, New York, N. Y. "Imperial."

International Steam Pump Co., 115 Broadway, New York, N. Y. "Clayton."

Jackson Compressor Co., 235 S. Cherokee St., Denver, Colo.

Jumbo—See U. S. Air Compressor Co.

Kellogg Mfg. Co., Rochester, N. Y.

Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.

Lacer Co., E. B., 846 S. Grand Ave., Los Angeles, Cal.

Lauchlin Air Starter & Tire Inflator Co., 220 Cedar St., Green Bay, Wis.

Lectroflater—See Black & Decker Mfg. Co.

Liberty—See Air Compressor & Equipment Co.

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Little Giant—See Orange Machine & Mfg. Co.

Longstroke—See Motor Starter & Air Pump Co.

Lucas-Miner Tool & Production Co., 427 Valley St., Dayton, O.

M. L. B.—See Bastian Auto Engineering Works.

Master—See Hartford Machine Screw Co.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. (See page 251.)

Midvale Machine Works—See Wesco Supply Co.

Minimax—See Herr.

Motor Starter & Air Pump Co., 52-60 Dickerson St., Newark, N. J. "Longstroke." (See page 671.)

Mueller, Wm. F., Farwell Ave. & Brady St., Milwaukee, Wis.

National Brake & Electric Co., Larkin St. & Bellevue Pl., Milwaukee, Wis.

Niebling & Co., F. W., Cincinnati, O.

Orange Machine & Mfg. Co., 230 S. Jefferson St., Orange, N. J. "Little Giant."

Oro—See Au-To Compressor Co.

Pacific Air Compressor Co., 917 S. Grand Ave., Los Angeles, Cal.

Parker Appliance Co., 2619 Vermont Ave., N. W., Cleveland, O.

Potts Mfg. Co., Mechanicsburg, Pa.

Quickflute—See Caldwell, R. L.

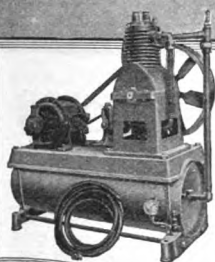
Rix Compressed Air & Drill Co., 505 Howard St., San Francisco, Cal.

Smith, Irvin C., 1243 W. Pico St., Los Angeles, Cal.

Spicer Mfg. Co., Groton, Conn.

Spohrer—See Weber Auto Accessory Co.

Everything is listed under the NOUN or principal word



CURTIS

Two-Stage Air Compressors

FREE
CURTIS AIR
FREE FROM OIL

An original design embodying all the good features of the Curtis Single Stage plus all possible advantages of two-stage compression. Aeroplane type (COPPER) inter-cooler with thin copper radiating fins rigidly attached, assuring most efficient cooling and fullest advantage of two-stage compression. Built in several styles in two capacities. Ask your jobber. Rather than accept a substitute, write us direct.

CURTIS PNEUMATIC MACHINERY CO.

1560 Kienlen Avenue

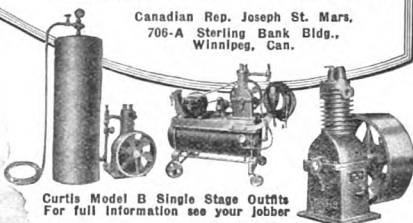
St. Louis, Mo.

BRANCH OFFICE

532-N Hudson Terminal

New York City

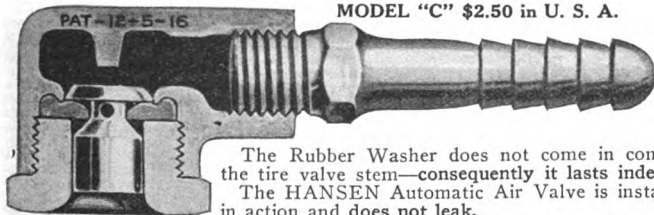
Canadian Rep. Joseph St. Mars,
706-A Sterling Bank Bldg.,
Winnipeg, Can.



Curtis Model B Single Stage Outfits
For full information see your jobber

"HANSEN" Automatic Air Valves

MODEL "C" \$2.50 in U. S. A.



The Rubber Washer does not come in contact with the tire valve stem—consequently it lasts indefinitely. The HANSEN Automatic Air Valve is instantaneous in action and does not leak.

"HANSEN" Engine Cleaner

A COMBINATION AIR GUN AND ENGINE CLEANER



For use with kerosene or other liquids. The only Engine Cleaner with positive control of air and liquid. Needle valve adjustment of spray. Air Gun can be quickly attached and detached from Engine Cleaner and used for general purposes. Price \$6.00 in U. S. A.

Sold exclusively through the jobbing trade.

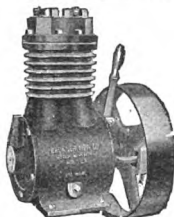
THE HANSEN MANUFACTURING CO., Cleveland, O.

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BRUNNER

BRUNNER AIR COMPRESSORS

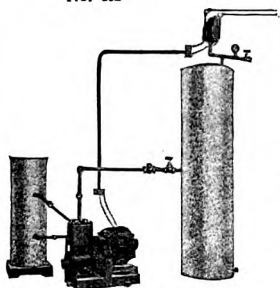
Handled by Leading Jobbers Everywhere



No. 102

No. 102—Double Cylinder Vertical Belt Driven Air Compressor

This compressor is designed for the average garage with line shaft. The bore is $1\frac{1}{8}$ in., stroke $2\frac{1}{2}$ in., guaranteed pressure 175 lbs. to the square inch (fitted for higher pressures upon order), capacity from $2\frac{1}{4}$ to 3 cubic feet free air per minute, depending upon speed, splash system lubrication, floor space $6\frac{1}{2}$ in. by 10 in. Each cylinder is fitted with a reliable safety valve which can be readily adjusted for varying pressures which is absolutely dependable under all conditions. A very efficient, durable and economical compressor.



No. 247

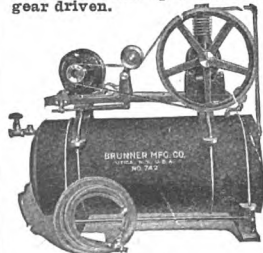
No. 247—Heavy Duty Tire Service Outfit

For serving giant pneumatic tires. Especially designed for installation where high pressure in generous volume is frequently required. This outfit is furnished complete with the exception of piping and includes our No. 47 two cylinder water cooled compressor, mounted with motor on cast iron base and operated by a 2 H. P. motor, 80 gallon Brunner heavy duty tank, No. 72 Brunner safety valve, Model H. air gauge, No. 70 horizontal check valve, No. 84 needle valve, No. 82 needle valve with swivel hose connection, two especially ground brass unions, one 25 foot length Brunner special air hose, ($\frac{3}{4}$ ""); and one automatic tire connection, cooling tank, automatic controller, safety fuses and all necessary fittings included. Capacity 7 cubic feet of free air per minute.

This outfit is large enough to take care of the heaviest air service, is reliable, economical, durable and everything about it is up to Brunner standards.

No. 742—Belt Driven Assembled Outfit

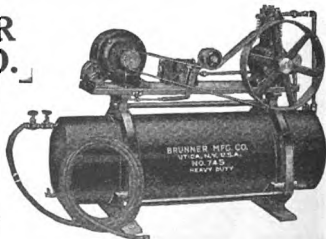
Especially designed for Gasoline filling stations, garage and similar installations where space is limited. Has sufficient capacity for garages housing up to 75 cars. Compressor—Two cylinder, air cooled having a displacement of $2\frac{1}{2}$ cubic feet of free air per minute, $\frac{1}{2}$ H. P. motor capable of starting compressor against 130 lbs. pressure without overloading, extra heavy Brunner Air Tank, 32 gallon capacity. The outfit is complete, including air gauge, check valve, 25 feet $\frac{3}{8}$ in. "Resistoll" Air Hose connected to one No. 82 needle valve on one end and having an automatic tire connection on the other. No. 542 assembled outfit same specifications as above but gear driven.



No. 742

No. 745—Belt Driven Heavy Duty Assembled Outfit

For service stations having a demand for air beyond the capacity of Nos. 742 or 542, and particularly for handling Giant pneumatic tires, this outfit is the proper selection. Air cooled, automatic, quiet operation and requires no setting up. Compressor—Our standard No. 105 two cylinder. Displacement $5\frac{1}{2}$ cu. ft. free air per minute. Motor— $1\frac{1}{2}$ H. P. starts readily against 175 lbs. tank pressure without overloading. Tank—Brunner "Special" 65 gal. (18"x60") tested to 400 lbs. guaranteed for 200 lbs. working pressure. The outfit is complete including accessories as listed in description of No. 742, also including automatic controller attached to bed.



No. 745

BRUNNER MFG. CO.

UTICA, N. Y.

Sales Offices:
Utica, N. Y.
Cincinnati, O.
Kansas City, Mo.

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BRUNNER

BRUNNER AIR SERVICE FITTINGS

Handled by Leading Jobbers Everywhere

No. 66—Portable Tire Inflator

Designed for inflating tires direct without the aid of a tank and storage system. The compressor is a two cylinder, air-cooled, with accurately ground cylinders, piston and piston rings. The motor $\frac{1}{4}$ H. P., specially designed, powering 20 feet of electric cord and plug, 20 feet Brunner "Resistoil" Air Hose, Tire connection, and air gauge to register tire pressure, makes this outfit complete and ready to operate when taken from the crate. An exceptionally good outfit for concerns operating a fleet of delivery trucks or salesmen's cars.



No. 66

No. 70—Brunner Horizontal Check Valve

A distinctive Brunner fitting, a proved and acknowledged success, radically different from other types. Fits so tight that it is called "bottle tight." A heavy brass shell houses a steel valve and fitted stem which controls the action and insures positive seating. The guide acts as a piston, creates an air cushion and prevents pounding. Guaranteed the best check valve on the market.



No. 70

Brunner Model "M" Pressure Controller

Automatically maintains air tank pressures between predetermined limits. It insures a constant supply of air, avoids delays, yet prevents waste of current caused by pumping after pressure in tank reaches that to which safety valve is set. It is very compact, substantially built and all moving parts are protected from dirt and dust.

Brunner Extra Heavy Galvanized Air Tanks

Are made of the very best Open Hearth Flange Steel, are heavily galvanized inside and out. They are made especially for air pressure and meet the most exacting specifications. Tested to 300 lbs.; guaranteed for a working pressure of 150 lbs. For special installations a heavier tank for 200 lb. working pressure may be had in genuine Brunner tank.



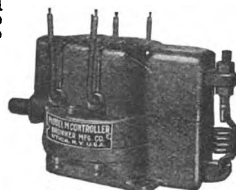
Air Tanks

Brunner "Resistoil" High Pressure Air Hose

Has an oil resisting inner tube, which in ordinary service will not become porous. It is especially made for air service, is guaranteed for 200 lbs. working pressure and will wear several times longer than ordinary air hose. Sizes $\frac{1}{4}$ in., $\frac{1}{2}$ in. and $\frac{3}{4}$ in.

No. 82—Brunner Needle Valve

For use in place of an ordinary air stop cock. One end is threaded to screw into the air line. Other end fitted with a swivel hose coupling to fit $\frac{1}{4}$ in., $\frac{1}{2}$ in. or $\frac{3}{4}$ in. hose. This valve is heavily constructed of brass suitable for 200 lbs. air pressure. It is absolutely air tight and is provided with stuffing box on the stem so that it can easily be repacked when necessary. Supplied with either $\frac{1}{4}$ in. or $\frac{3}{4}$ in. male connection, but $\frac{3}{4}$ in. is always furnished unless otherwise specified.



Model "M" Controller

BRUNNER MANUFACTURING CO.

UTICA, N. Y.

Sales Offices: Utica, N. Y., Cincinnati, O., Kansas City, Mo.



Model "A" Gauge



No. 82



"Resistoil" Air Hose

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COMPRESSORS, Garage Air (Continued)

Stratton & Bragg Co., Petersburg, Va.
 Stroh & Dorman, Barborton, O.
 Stuckeman Bros., 380 Liberty Ave., Pittsburgh, Pa.
 Success—See Brown Beer Pump Co.
 Tandem—See Herz.
 Trager Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 849.)
 Twentieth Century—See Gasco Mfg. Co.
 Union Steam Pump Co., Jefferson & Madison Sts., Battle Creek, Mich.
 Union Equipment Co., Negley Ave., Butler, Pa.
 U. S. Air Compressor Co., 5300 Harvard Ave., Cleveland, O. "Usaco," "Jumbo."
 United States & Cuban Allied Works, Bradford, Pa.
 Universal Air Compressor Co., Brookside Ave. at 11th St., Indianapolis, Ind.
 Universal Pure Air Pump Co., 1607-11 Prairie Ave., Chicago, Ill.
 Usaco—See U. S. Air Compressor Co.
 Utica Compressor Co., 819 Hamilton St., Utica, N. Y.
 Victory—See Globe Mfg. Co.
 Vulcan Mfg. Co., White Oak & Osage Sts., Independence, Mo. "Faultless."
 Weber Auto Accessory Co., Sixth Ave. & N. 18th St., Newark, N. J. "Spohrer." (See page 291.)
 Wesco Supply Co., Seventh St. & Clark Ave., St. Louis, Mo. (Sole Distributors for Midvale Machine Works, St. Louis, Mo.)
 Westinghouse Air Brake Co., Pittsburgh, Pa.

COMPRESSORS, TRANSMISSION BAND SPRING FOR FORDS—See Tools, Transmission Band Spring Compressing

CONDENSERS, Electric

Magneto Winding Co., 1723 Eighth Ave., Brooklyn, N. Y.
 Millwood-Brackett Co., Des Moines, Ia. (See page 327.)
 Wireless Specialty Apparatus Co., Boston, Mass.

CONDENSERS, Radiator

(To be attached to radiator cap to prevent the loss of water or anti-freezing mixture and obviate the necessity of constant refilling of radiator)

Cone-Denser Mfg. Co., 979-81 Central Ave., Minneapolis, Minn.
 Masco—See Mayer Auto Accessories Corp.
 Mayer Auto Accessories Corp., 333 Washington St., Buffalo, N. Y. "Masco."

CONDUIT, Flexible Car Wiring

(Metal and fabric conduit; see also Tubing, Flexible Metals)

Alphaduct Co., 186 Cator Ave., Jersey City, N. J.
 American Metal Hose Co., Waterbury, Conn. (See page 287.)
 American Metal Molding Co., 141 N. J. Railroad Ave., Newark, N. J.
 Arrow Flexible Conduit Co., 210-12 Canal St., New York, N. Y.
 Auto-Brassflex—See National Metal Molding Co.
 Autoflex—See National Metal Molding Co.
 Auto-Steelflex—See National Metal Molding Co.
 Dewes Co., A., 199 Lafayette St., New York, N. Y.
 Federal Metal Hose Corp., 45 N. Division St., Buffalo, N. Y.

National Metal Molding Co., Pittsburgh, Pa. "Auto-Steelflex," "Auto-Brassflex," "Autoflex." (See page 453.)
 Safety-Armorite Conduit Co., Bailey-Farrell Bldg., Pittsburgh, Pa.
 Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 909.)

CONES, BALL—See Cups, Ball

CONNECTING ROD ALIGNING JIGS—See Jigs, Connecting Rod Aligning

CONNECTING ROD BABBITTING JIGS FOR FORDS—See Jigs, Main Bearing Connecting Rod Babbitting

CONNECTING ROD BUSHINGS — See Bushings, Bronze

CONNECTING ROD GAGES FOR FORDS — See Gages, Connecting Rod

CONNECTING ROD REAMERS FOR FORDS—See Reamers, Main Bearing and Connecting Rod

CONNECTING RODS—See Rods, Connecting

CONNECTING TOOLS, TRANSMISSION BAND SPRING FOR FORDS — See Tools, Transmission Band Spring Connecting

CONNECTIONS, Air System Tire

Automatic Safety Tire Valve Corp., 1753-55 Broadway, New York, N. Y. "Loxon."
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Leak-Not." (See page 523.)
 Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. "Sturdy." (See page 265.)
 Hansen Mfg. Co., Cleveland, O. (See page 283.)
 Leak-Not—See Edelmann & Co.
 Loxon—See Automatic Safety Tire Valve Corp.
 Romort Mfg. Co.—See Zinke Co.
 Schrader's Son, A., Brooklyn, N. Y. (See page 241.)
 Sturdy—See Gray-Hofman Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 772 and 773.)

CONNECTIONS, BATTERY—See Connectors, Battery

CONNECTIONS, Brass Water

American Brass & Iron Co., Detroit, Mich. (See page 203.)
 Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. (See page 265.)
 Greer, Frederic, 2437 Michigan Ave., Chicago, Ill.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Niagara Brass Mfg. Co., Lockport, N. Y.
 Roberts Brass Co., 176-82 Lincoln Ave., Milwaukee, Wis. (See page 671.)
 Standard Metalwork Co., 92-108 Prospect St., Thompsonville, Conn.
 Standard Tool & Mfg. Co., 512-24 E. Lafayette Blvd., Detroit, Mich. (See page 579.)
 Whitlock Coil Pipe Co., Hartford, Conn.
 Western Brass Mfg. Works, Marshall Blvd. & 51st St., Chicago, Ill. (See page 471.)
 Wilkinson Co., Wm. H., Main St., West Medway, Mass.

Everything is listed under the NOUN or principal word

THE AMERICAN METAL HOSE CO.

WATERBURY, CONN.

SALES OFFICES

173 Lafayette St.
NEW YORK

29 East Madison St.
CHICAGO

84 Battery March St.
BOSTON

Union Bank Bldg.
PITTSBURGH

FLEXIBLE METAL HOSE

for Oils, Steam, Gasoline, Paint, Varnish and Vacuum

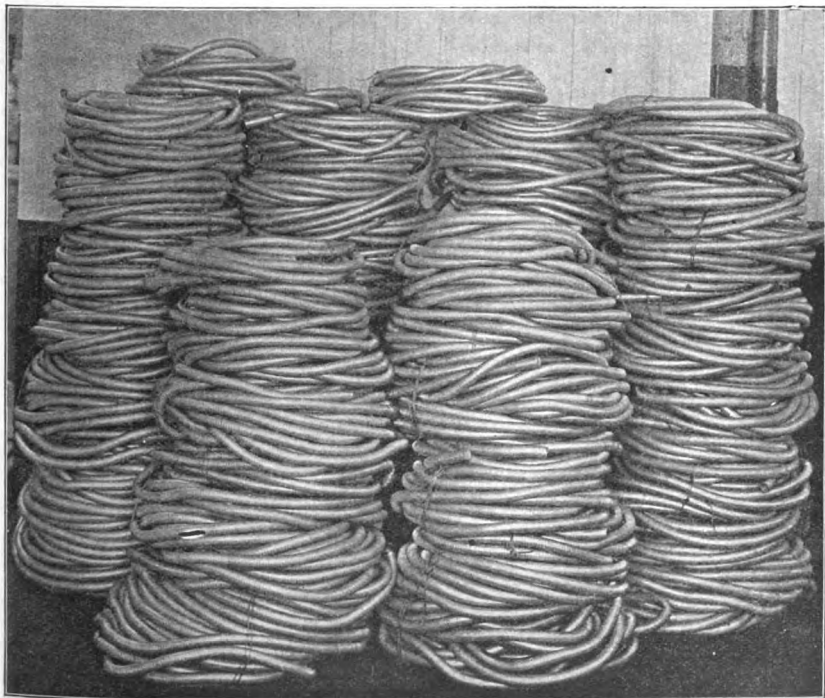
FLEXIBLE METAL TUBING

for Exhaust, Air, Carburetor and Heater Connections and Speedometer Casings

FLEXIBLE METAL CONDUIT

for insulating electric cables, etc.

AMERICAN METAL SPECIAL GASOLINE HOSE



10,000 ft. Carburetor Tubing Ready for Shipment

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CONNECTIONS, Disc Wheel Tire

(For facilitating inflation of tires on disc wheels)
Plant Royalties Co., 554 Diversey Parkway,
Chicago, Ill.

CONNECTIONS, Gas Tubing

(Brass Y's, T's and L's for connecting Acetylene
Headlights.)

Cox Brass Mfg. Co., Albany, N. Y.
(See page 168.)

Gray-Hofman Co., 542-48 North Parkside
Ave., Chicago, Ill. (See page 265.)

Morgan Mfg. Co., Court St., Keene, N. H.
(See page 675.)

Uniform Seamless Wire Co., 71 Peck St.,
Providence, R. I.

Western Brass Mfg. Works, Marshall
Blvd. & 21st St., Chicago, Ill.
(See page 471.)

**CONNECTIONS, PUMP—See Connections,
Tire Pump****CONNECTIONS, RADIATOR, FOR FORDS**
—See Hose, Radiator**CONNECTIONS, SPARK—See Joints, Ball****CONNECTIONS, Steering**

Balcrank—See Cincinnati Ball Crank Co.

Central Service Corp., 1007 Merchants
Bank Bldg., Indianapolis, Ind., (Sales
Representatives.) (See page 945.)

Cincinnati Ball Crank Co., Cincinnati, O.
"Balcrank." (See page 498.)

Columbus Auto Parts Co., 215 E. Russell St.,
Columbus, O.

S & W—See Schweppe & Wilt Mfg. Co.
Schweppe & Wilt Mfg. Co., Mt. Elliott & Conant
Aves., Detroit, Mich. "S. & W."
Shawn Mfg. Co., 1 Columbia St., Lynn, Mass.
(See page 367.)

Steel Products Co. (Michigan Plant) 7731
Conant Ave., Detroit, Mich.

Steel Products Co., Cleveland, O.
(See page 916.)

CONNECTIONS, STEERING, FOR FORDS
—See Links, Steering**CONNECTIONS, THROTTLE—See Joints,
Ball****CONNECTIONS, Tire Pump**

Acorn—See Stevens & Co.

Acornette—See Stevens & Co.

Adjustable Lighter Co., 18 Pearl St., Newton,
Mass. "Larkin"

Apex Electric Mfg. Co., 1410 W. 59th St.,
Chicago, Ill. "Bull Dog."

Automatic Safety Tire Valve Corp., Long
Island City, N. Y. "Whistler."

Autoquip Mfg. Co., Rochester, N. Y.

Bell Pump & Mfg. Co., 634 E. Fort St., De-
troit, Mich.

Bull Dog—See Apex Electric Mfg. Co.

C & S—See Codman & Shurtliff.

Chicago Recording Scale Co., Madison & Sand
Sts., Waukegan, Ill. "Cresco."

Codman & Shurtliff, 120 Boylston St., Boston,
Mass. "C & S."

Cresco—See Chicago Recording Scale Co.

Edelmann & Co., E., 2638 N. Crawford
Ave., Chicago, Ill. "Han-D."

(See page 623.)

Evertight—See Smith Bros. Garage.

Gleason-Peters Air Pump Co., 384 Classon
Ave., Brooklyn, N. Y.

Gurnard Mfg. Co., 97 Rantoul St., Beverly,
Mass. "Thumlock."

Han-D—See Edelmann & Co.

Hansen Mfg. Co., Cleveland, O.

(See page 283.)

Ideal—See Stevens & Co.

Judd & Leland Mfg. Co., Clifton Springs,
N. Y.

Keno—See Stevens & Co.

King, L., Gerald, 21 Pine St., Deposit, N. Y.

Larkin—See Adjustable Lighter Co.

Mayo-Skinner Mfg. Co., 2115 Elston Ave.,
Chicago, Ill. (See page 251.)

Nelson Mfg. Co., A., 2700 Southport Ave.,
Chicago, Ill.

Newton Mfg. Co., Plainville, Conn.
(See page 315.)

Perfect—See Youse Co.

Perfection—See Smith Auto Co.

Perfection—See Stevens & Co.

Romort Mfg. Co.—See Zinke Co.

Schrader's Son, A., Brooklyn, N. Y.
(See page 241.)

Smith Auto Co., Clyde H., Skowhegan, Me.
"Perfection."

Smith Bros. Garage, 467-69 Main St., Melrose,
Mass. "Evertight."

Stevens & Co., 375 Broadway, New York,
N. Y. "Keno," "Perfection," "Acorn,"
"Ideal," "Acornette." (See page 197.)

Thumlock—See Gurnard Mfg. Co.

Whistler—See Automatic Safety Tire Valve
Corp.

Youse Co., E. S., 46 N. Fifth St., Reading,
Pa. "Perfect."

Zinke Co., 1323-25 Michigan Ave., Chi-
cago, Ill. (Sales Department for Ro-
mort Mfg. Co., Oakfield, Wis.)
(See pages 772 and 773.)

**CONNECTIONS, TRAILER—See Couplers,
Trailer****CONNECTIONS, TUBING—See Unions,
Tubing****CONNECTOR DRILLS—See Drills and Bits,
Battery Strap****CONNECTORS, Acetylene Lamp**

(Flexible Metal Connectors; for Rubber Connectors—
See Tubing, Soft Rubber)

Breeze Metal Hose & Mfg. Co., 250-52 South
St., Newark, N. J.

Penflex—See Pennsylvania Flexible Metallic
Tubing Co.

Pennsylvania Flexible Metallic Tubing Co.,
Broad & Race Sts., Philadelphia, Pa. "Pen-
flex"

Titeflex Metal Hose Corp., Badger Ave. &
Bunyon St., Newark, N. J.

(See page 908.)

CONNECTORS, BELT—See Fasteners, Belt**CONNECTORS, Dry Battery**

(See also Terminals, Wire)

Bailey Co., W. J., 401 Mulberry St., Newark,
N. J. "C. B."

Barcy-Nicholson Co., 2801-19 W. Fort St., De-
troit, Mich.

Battery Parts Co., 434 Penn Ave., (Wilkins-
burg Sta.), Pittsburgh, Pa.

Belden Mfg. Co., 2300 South Western Ave.,
Chicago, Ill. (See page 187.)

Breaznell, J. H., 26 Court St., Brooklyn, N. Y.

C. B.—See Bailey Co.

Chicago Electric Mfg. Co., 2801-19 S. Halsted
St., Chicago, Ill. "Handy."

Everything is listed under the NOUN or principal word

ACCESSORIES MANUFACTURING COMPANY

2311-29 N. Crawford Ave., Chicago

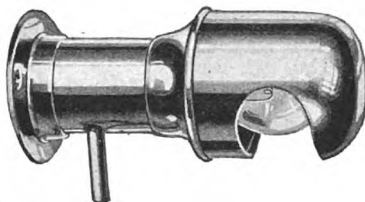
Manufacturers of:



DASH LAMPS, SOCKETS AND PLUGS

for head, tail, side, spot, park-
ing or signal lamps.

Switches for signal lamps.



Porter
Easy
Gasoline
Control
for
Ford Cars

Installed
Easily in
a Few
Minutes

Price
\$2.00

\$3.00

in Canada

Complete

THINK WHAT THIS MEANS

Gives maximum power and efficiency to your motor
by allowing for the correct adjustment of gasoline
mixture instantly to meet changing driving conditions.

Keep Your Mixture as Lean as Possible
WE HAVE AN ATTRACTIVE PROPOSITION
FOR SALES REPRESENTATIVES

Manufactured by

PORTER PRODUCTS CORPORATION

General Offices:

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Syracuse, N. Y.

CONNECTICUT IGNITION

Designed for its work

225Y Coil Delivers a Spark

more capable of ignition under
adverse conditions—

more capable of ignition at
highest speed—

more capable of ignition at low-
est speed—

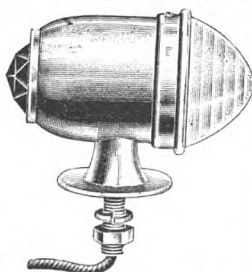
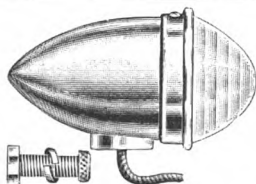
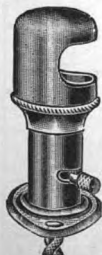
more capable of ignition with
a weak battery—

because

*it is designed with all
its circuits in resonance.*

Complete information
and data upon request.

CONNECTICUT TELEPHONE & ELECTRIC COMPANY
Meriden Connecticut



Jobbers—Send for catalog and price list

Aid Manufacturing Co., Inc.

2625-2631 STEWART AVENUE

CHICAGO

Please mention The Automobile Trade Directory

CONNECTORS, Dry Battery (Continued)

Fahnestock Electric Co., East Ave & Eighth St., Long Island City, N. Y.
 Fitzgerald Mfg. Co., Railroad Ave., Torrington, Conn. "Perfection," "Standard." (See page 411.)
 Handy—See Chicago Electric Mfg. Co.
 Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.
 Hi-Po Waterproof Battery Corp., South Norwalk, Conn.
 Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 247.)
 Lemke Electric Co., 505-13 Cedar St., Milwaukee, Wis.
 Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
 Perfection—See Fitzgerald Mfg. Co.
 Shain, Chas. D., Brooklyn, N. Y.
 Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 853.)
 Standard—See Fitzgerald Mfg. Co.

CONNECTORS, Electric Lamp

Accesso Mfg. Co., 99 State St., Boston, Mass.
 Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill. (See page 289.)
 Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 289.)
 Amco—See Aid Mfg. Co.
 Chicago Electric Mfg. Co., 2801-19 S. Halsted St., Chicago, Ill. "Handy."
 Cole & Co., Henry, 54 Old Colony Ave., Boston, Mass.
 Culver-Stearns Mfg. Co., 55 Grafton St., Worcester, Mass.
 Douglas & Rudd Mfg. Co., Bronson, Mich.
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Connectors.) (See page 429.)
 Fracto, Inc., 161 Massachusetts Ave., Boston, Mass.
 Handy—See Chicago Electric Mfg. Co.
 Higginson-Gibson Mfg. Co., 76 Atherton St., (Jamaica Plains), Boston, Mass.
 Loewus, Edwin H., 304 W. 54th St., New York, N. Y.
 Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)
 Millwood-Brackett Co., Des Moines, Ia. (See page 327.)
 Morse, Frank W., 280 Congress St., Boston, Mass. (See page 221.)
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Beaver St., Waltham, Mass. "Masco."
 Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass. (See page 809.)
 Presto—See Metal Specialties Mfg. Co.
 Rawson Co., Frank C., 54 Willow St., Lynn, Mass.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)
 Whitman, B. J., 141 Franklin St., Boston, Mass.

CONNECTORS, LAMP—See Connectors, Acetylene Lamp; also Connectors, Electric Lamp

CONNECTORS, PUMP—See Connections, Tire Pump

CONNECTORS, Storage Battery

American Storage Battery Parts Co., 650-60 E. 163rd St., Cleveland, O.
 Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 94.)
 Automobile Ignition Supply Co., 1124 Michigan Blvd., Chicago, Ill.
 Battery Parts Co., Penn Ave., Wilkinsburg, Pa.
 Benson Electric Co., 704-06 Southwest Blvd., Kansas City, Mo.
 Common-Sense—See Peerblow Mfg. Co.
 Degen Bros., 1303 S. Michigan Ave., Chicago, Ill.
 Harco Co., 1025 16th Ave., East Moline, Ill.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Whitaker Battery & Supply Co., Kansas City, Mo.) (See page 135.)
 Lance Mfg. Co., 247 Centre St., New York, N. Y.
 Meeco Spe-De—See Motor Electrical Equipment Co.
 Meikle Mfg. Co., Eighth & Princeton Sts., Springfield, Ill. "Springfield." (See page 547.)
 Motor Electrical Equipment Co., 1606 Michigan Ave., Chicago, Ill. "Meeco Spe-De."
 No-Krode Mfg. Co., 514 E. Pike St., Seattle, Wash.
 Ohio Pattern Works & Foundry Co., 2730 Spring Grove Ave., Cincinnati, O.
 Peerblow Mfg. Co., Leetsdale, Pa. "Common-Sense."
 Skontz Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (Dealers.) (See page 151.)
 Springfield—See Meikle Mfg. Co.
 Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa.
 Whitaker Battery & Supply Co.—See Jonas, C. N. & F. W.

CONNECTORS, STORAGE BATTERY REPAIR—See Parts, Storage Battery Repair

CONNECTORS, TRACTOR—See Clevises, Automatic Tractor

CONNECTORS, TRAILER—See Couplers, Trailer

CONSULTING ENGINEERS—See Engineers, Consulting

CONTAINERS, PAPER—See Boxes, Paper
CONTRACT WORK—See Machine Work; also Screw Machine Products; also Stampings; also Castings; also Patterns

CONTRACTING BRAKES—See Brakes, Expanding and Contracting

CONTRACTING BRAKES FOR FORDS—See Brakes, Emergency Contracting

CONTROL CABLE—See Cable, Flexible Control

CONTROL LEVER BALLS—See Balls, Composition Control Lever

CONTROL LEVERS—See Levers, Brake

CONTROL RODS FOR FORDS—See Rods, Gasoline Cock Control

CONTROLLERS, Electric Motor

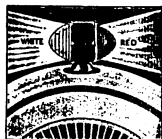
(For varying speed of electric vehicles)

Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis.
 General Electric Co., Schenectady, N. Y. (See page 697.)
 I. C.—See Industrial Controller Co.
 Industrial Controller Co., 886 Greenbush St., Milwaukee, Wis. "I. C."
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Everything is listed under the NOUN or principal word



Trade Mark

**No. 77 Parking Lamp**

A new addition to our line of parking lamps — meets the demand for a distinctive high grade lamp suitable for the most expensive car. Body is finished in handsome black with solid brass nickel-plated trimmings — very neat appearing. 6v bulb — 2½ in. beehive lenses. List \$3.00

**No. 90 Dome Lamp**

Solid brass construction in all nickel finish with removable socket plug. 2½ in. cut star lens. 6v bulb. List \$2.50

heavily nickel plated, but if desired, may be had in black finish with nickel-plated front only. Complete with 6v bulb, 2½ in. etched dome beehive lenses.

This lamp is also supplied with flat etched lens. Order as No. 272. List Price \$6.00 per Pair. List Price \$5.50 per Pair

**New Model Side Lamps****No. 271**

A highly efficient bullet type side lamp. Very distinctive design — adds to the appearance of any car. Solid brass construction on chrome-plated front only. Complete with 6v bulb, 2½ in. etched dome beehive lenses.

List Price \$6.00 per Pair. List Price \$5.50 per Pair

**No. 31 Trouble Lamp**

Black enameled outer body with separate solid brass silver plated inner reflector. 6v bulb. List \$2.25

**No. 261A Ford Tail Lamp**

Rides continuous electric service. Equipped with 2 bulbs, one 1.5v for dry cell use, and one 18v for magneto. Complete with cable and switch. List \$2.25

Hard Rubber Connectors

We make a complete line of high grade plugs and sockets. All plugs fitted with special heavy solder cap — no breakage. Jobbers and car equipment manufacturers — our prices are most attractive.

SMITH**Electric Adapters for Ford Oil Lamps**

Spring in front flange of oil lamp and wired direct to magneto. Controlled by headlight switch. Complete with 18v bulb and cable. No. 266c. List \$1.25

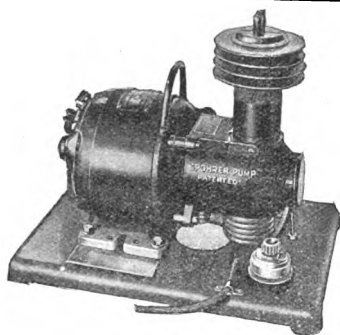
Ask for copy of New No. 25 Catalog

F. A. Smith Mfg. Co., Inc., Rochester, N. Y.

**No. 100 Ash Receiver**

Combination ash receiver, match box holder and cigar rest. Solid brass construction throughout, heavily nickel plated. Receiver being detachable for cleaning purposes and perfectly sanitary. Two hooks to the back of bracket permitting receiver to be instantly placed in any desired position, or for permanent attachment to dash board or side of car; solid brass screws are furnished.

List \$2.50



Fewer Parts Less Money More Air

The compressors shown here are typical of a line well worth investigating, on account of these practical features:

More compact; no moving parts exposed.

Fewer parts to wear and absorb power.

Less floor space required.

Less weight.

Radically different in design from all others.

SPOHRER ELECTRIC AIR COMPRESSORS



Several models, both stationary and portable, are open to your investigation. These can be automatically controlled and are completely equipped. We are also manufacturers of Engine-driven Tire Pumps.

Write for complete descriptive literature including details of construction, weight, size, price, etc.

Spohrer ELECTRIC DRIVEN COMPRESSORS

Weber Auto Accessory Co.

6th Ave. & N. 13th St., Newark, N. J.

Please mention The Automobile Trade Directory

CONTROLLERS, RADIATOR TEMPERATURE FOR FORDS—See Covers, Automatic Radiator

CONTROLLERS, Storage Battery

(For mounting on the Instrument Board to automatically reduce the charging rate if too high)

Allen-Bradley Co., 284 Greenfield Ave., Milwaukee, Wis. "Bradleystat."
Battery Appliance Corp., 3 W. 44th St., New York, N. Y. "G. B. C."
Bradleystat—See Allen-Bradley Co.
G. B. C.—See Battery Appliance Corp.

CONTROLLERS, Vulcanizer Steam Pressure

(Automatic valve to regulate the flow of gas to the burner on a steam vulcanizer and so control the steam pressure)

Alliance Controller Co., 445 S. Arch Ave., Alliance, O.
Bacon Vulcanizer Mfg. Co., 4065 Hollis St., Oakland, Cal.
Barton Mfg. Co., 800 N. Saginaw St., Flint, Mich. "Simplex."
Simplex—See Barton Mfg. Co.

CONTROLS, Auxiliary Tractor

(Auxiliary or extension control to permit operation of tractor from seat of implement)

Cherokee Guide Co., Cherokee, Iowa.
Cole Mfg. Co., 1234 Central Ave., Minneapolis, Minn.
Repking Mfg. Co., Dieterich, Ill.
Sella Mfg. Co., 1325 E. 20th St., Des Moines, Ia.

CONTROLS, CARBURETOR—See Controls, Dash and Steering Columns

CONTROLS, CARBURETOR, FOR FORDS—See Controls, Dash Carburetor

CONTROLS, Clutch, for Fords

(Attachment for defining or indicating the neutral position of the clutch. For attachment for releasing the clutch when the foot brake is applied—See Releasers, Clutch.)

Kostaford Mfg. & Selling Co., Minneapolis, Minn.
Lewi Clutch Control Co., 296 Lark St., Albany, N. Y.
Shannon & Co., John, Stonington, Conn.

CONTROLS, Dash Carburetor for Fords

(For facilitating adjustment of Carburetor or for operating choke from seat)

Bee Zee—See Zimmerman Mfg. Co.
D. & R.—See Harrington Co.
Fairchild Mfg. Co., Kalamazoo, Mich. (See page 725.)
Harrington Co., O. C., 4138 Fillmore St., Chicago, Ill. "D. & B."
Nance Mfg. Co., 1348 N. Clark St., Chicago, Ill.
Porter, Inc., San Diego, Cal.
Porter Products Corp., 670 Keith Bldg., Syracuse, N. Y. (See page 289.)
Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 787.)
Warner Carburetor Control Co., 8 E. Broad St., Columbus, O.
Zimmerman Mfg. Co., B. F., New Haven, Conn. "Bee Zee." (See page 841.)

CONTROLS, Dash and Steering Column Carburetor

(For changing adjustment of carburetor from seat or operating choke for starting; See also Carburetors)

Atkins Co., E. G., 36 E. Sixth St., Mansfield, O.
Breeze Metal Hose & Mfg. Co., 250-52 South St., Newark, N. J.

CONTROLS, STEERING COLUMN—See Controls, Dash and Steering Column Carburetor

CONTROLS, TRACTOR—See Controls, Auxiliary Tractor

CONVERTERS, Chassis

(For connecting standard cars for truck and tractor purposes; for converters for Ford cars—See Converters, Chassis, for Fords.)

Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "Ameston."
Amesbury—See Jackson Motor Car Co.
Ameston—See Ames Co.
Andrews Heating Co., 2529 University Ave. S. E., Minneapolis, Minn. "Big-Auto."
Big-Auto—See Andrews Heating Co.
Burman, Chas. H., 3074 Broadway, Oakland, Cal.
Carrier Motor Truck Co., 7641 Gratiot Ave., Detroit, Mich.
Dearborn Truck Co., Chicago, Ill. "Smith."
E. & W. Mfg. Co., Cedarburg, Wis. "Three-in-One."
Fitzall—See Huford Co. of Chicago.
Goldman Auto Co., 1010 Folsom St., San Francisco, Cal.
Guaranteed Tractors, Transportation Bldg., Chicago, Ill.
Hedden Place Machine Co., East Orange, N. J.
Hewitt-Ludlow Auto Co., 901-51 Indiana St., San Francisco, Cal.
Hoover Wagon Co., York, Pa.
Huford Co. of Chicago, 1446-48 S. Wabash Ave., Chicago, Ill. "Fitzall."
Illinois Form-A-Tractor Co., Old Colony Bldg., Chicago, Ill.
International Auto-Tractor Corp., 439 Fifth Ave., New York, N. Y. "Wales."
Iowa Motor Truck Co., Madison Ave., Ottumwa, Iowa.
Keystone Motor Truck Corp., Oaks, Pa. "Truxton," "Unitrux."
Mars Mfg. Co., Yakima, Wash.
No-Chain Truck Unit Co., 3302-04 Lawton Ave., St. Louis, Mo.
Partford—See Partlow-Jenkins Motor Car Co.
Partlow-Jenkins Motor Car Co., 319-23 E. Market St., Indianapolis, Ind. "Partford."
Phenix Truck Makers, 4948 Bloomingdale Rd., Chicago, Ill.
Rayford Unit Co., Second St. & Indiana Ave., Philadelphia, Pa.
Six Wheel Truck Co., Fox Lake, Wis.
Smith—See Dearborn Truck Co.
Smith Cove Machine Works, 2012 15th Ave., N. W. Seattle, Wash.
Three-in-One—See E. & W. Mfg. Co.
Truxton—See Keystone Motor Truck Corp.
Union Truck Co., 250 W. 54th St., New York, N. Y.
Unitrux—See Keystone Motor Truck Corp.
Victor Truck Co., 319 Main St., St. Joseph, Mo.
Waco Mfg. Co., 705 Delaware St., Kansas City, Mo.
Wales—See International Auto-Tractor Corp.

Everything is listed under the NOUN or principal word

CONVERTERS, Chassis, for Fords

(For converting the Ford chassis for truck and tractor purposes; for converters for other cars—See *Converters, Chassis.*)

Adapto—See Geneva Tractor Co.
Affordable Motor Truck Corp., 1154-58 N. 16th St., Omaha, Neb.
Ames Co., F. A., 401 W. Fourth St., Owensboro, Ky. "Amesbilt."
Amesbilt—See Ames Co.
Amesbury—See Jackson Motor Car Co.
Ameston—See Ames Co.
Andrews Heating Co., 2529 University Ave. S. E., Minneapolis, Minn. "Handy-Hank."
Arnold Motor Car Co., 191-207 Paterson St., Paterson, N. J.
Auto-Motive Tractor Corp., Frederick, Md. "S. A. T."
Axleford Truck Co., 7311 Crandon Ave., Chicago, Ill.
Blount Carriage & Buggy Co., 89 S. Forsythe St., Atlanta, Ga. "Ferguson."
Burman, Chas. H., 3074 Broadway, Oakland Cal.
Camelford—See Maremont Mfg. Co.
Carrier Motor Truck Co., 7641 Gratiot Ave., Detroit, Mich. "Detroit."
Comdelcar—See Longford Co. of America.
Dearborn Truck Co., Chicago, Ill. "Smith."
Detroit—See Carrier Motor Truck Co.
Defender Corp., A. J., 410 W. 52d St., New York, N. Y. "Hay Dee."
EZE—See Hudford Co. of Chicago.
E. & W. Mfg. Co., Cedarburg, Wis. "Three-in-One."
Feeney Mfg. Co., Washington St. & Ohio Ave., Muncie, Ind.
Ferguson—See Blount Carriage & Buggy Co.
Flexo—See Hudson Motor Specialties Co.
Franklin 2 Way Converter Co., 69 W. Washington St., Chicago, Ill.
Geneva Tractor Co., 3 Factory Row, Geneva, O. "Adapto."
Goldman Auto Co., 1010 Folsom St., San Francisco, Cal.
Greb Co., 195 State St., Boston, Mass. "Grebford," "P. B. B." (See page 607.)
Grebford—See Greb Co.
Guaranteed Tractors, Transportation Bldg., Chicago, Ill.
Handy-Hank—See Andrews Heating Co.
Hay Dee—See Defender Corp.
Hedden Place Machine Co., East Orange, N. J. "Stevenson."
Hewitt-Ludlow Auto Co., 901-51 Indiana St., San Francisco, Cal.
Hoover Wagon Co., York, Pa.
Hudford Co. of Chicago, 1446-48 S. Wabash Ave., Chicago, Ill. "EZE."
Hudson Motor Specialties Co., 1924 Arch St., Philadelphia, Pa. "Flexo."
Illinois Form-A-Tractor Co., Old Colony Bldg., Chicago, Ill.
Indestructible Wheel Co., Lebanon, Ind.
Iowa Motor Truck Co., Madison Ave., Ottumwa, Ia.
Its Manufacturers, Glen Ellyn, Ill.
Jewett Truck Attachment Co., S. William St., Newark, O.
Jiffy—See Northfield Iron Co.
Keystone Motor Truck Corp., Oaks, Pa. "Truxton," "Unitrux."
Longford Co. of America, 10 Scotia St., Boston, Mass. "Comdelcar."
Maremont Mfg. Co., 916-18 Wabash Ave., Chicago, Ill. "Camelford." (See page 791.)
Mars Mfg. Co., Yakima, Wash.

Ne-Chain Truck Unit Co., 3302-04 Lawton Ave., St. Louis, Mo.
Northfield Iron Co., Jiffy Bldg., Northfield, Minn. "Jiffy."
Odell One-Ton Truck Attachment Co., 541 Peachtree St., Atlanta, Ga.
Olin Gas Engine Co., 10-16 Lock St., Buffalo, N. Y.
Olson—See Swedish Crucible Steel Co.
P. B. B.—See Greb Co.
Partford—See Partlow-Jenkins Motor Car Co.
Partlow-Jenkins Motor Car Co., 319-23 E. Market St., Indianapolis, Ind. "Partford."
Phenix Truck Makers, 4948 Bloomingdale Rd., Chicago, Ill.
Rayford Unit Co., Second St. & Indiana Ave., Philadelphia, Pa.
Robinson Motor Truck Co., 1307 Western Ave., Minneapolis, Minn. "Utility."
S. A. T.—See Auto-Motive Tractor Corp.
Selden Mfg. Co., 41-61 Selden Ave., Detroit, Mich.
Smith—See Dearborn Truck Co.
Smith Cove Machine Works, 2012 15th Ave., N. W. Seattle, Wash.
Stevenson—See Hedden Place Machine Co.
Swedish Crucible Steel Co., Butler Ave. & G. T. R. R., Detroit, Mich. "Olson."
Three-in-One—See E. & W. Mfg. Co.
Tompson, N. W., 10 Scotia St., Boston, Mass. (New England Distributors for Comdelcar Converters) (See page 161.)
Truxton—See Keystone Motor Truck Corp.
Union Truck Co., 250 W. 84th St., New York, N. Y.
United Auto Dealers Mfg. Co., 931-48 Bergen St., Brooklyn, N. Y.
Universal Body Corp., Mishawaka, Ind.
Unitrux—See Keystone Motor Truck Corp.
Utility—See Robinson Motor Truck Co.
Victor Truck Co., 219 Main St., St. Joseph, Mich.
Waco Mfg. Co., 706 Delaware St., Kansas City, Mo.
Wayne Works, 16th & North F Sts., Richmond, Ind.
Weihsaupt-Savage Co., 308 S. Fourth St., La Crosse, Wis.
Will-Holl—See Wilson-Holland Mfg. Co.
Wilson-Holland Mfg. Co., Gratiot Ave. & French Rd., Detroit, Mich. "Will-Holl."
Wiseman-Elliott Mfg. Co., El Paso, Tex.
Xtend-A-Ford Co., 1610 Glenwood Ave., Philadelphia, Pa.

CONVERTERS, TOP

Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.

CONVERTERS, Top, for Fords

(Attachment to convert old style tops to one-man tops)
American Forging & Socket Co., Pontiac, Mich. (See page 387.)

Charge-It—See Glessen & Son.

Geissel & Sons, A., 435-37 N. Third St., Philadelphia, Pa.

Glessen & Son, Fred M., E. Second & High Aves., Cleveland, O. "Charge-It."

Pennypacker Mfg. Co., 2206 Michigan Ave., Chicago, Ill.

Precision Metal Workers, 3100-12 Carroll Ave., Chicago, Ill.

Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.

CONVERTERS, TRUCK—See Converters, Chassis**COOLERS, WATER—See Radiators, Water Cooling**

Everything is listed under the NOUN or principal word

COOLING FANS—See Fans, Radiator

COPPER CASTINGS—See Castings, Bronze and Brass

COPPER GASKETS—See Gaskets, Metallic

COPPER GASKETS FOR FORDS—See Gaskets, Cylinder Head

COPPER HAMMERS—See Hammers, Soft Metal

COPPER MALLETS—See Hammers, Soft Metal

COPPER MELTING FURNACES—See Furnaces, Brass and Copper Melting

COPPER RIVETS—See Rivets, Brass

COPPER, ROD—See Brass, Sheet

COPPER, SHEET—See Brass, Sheet

COPPER SOLDERING IRONS—See Irons, Copper Soldering

COPPER, TUBE—See Tubing, Brass

CORD, COACH—See Lace, Coach

CORE COMPOUNDS—See Compounds, Core

CORE HOLE PLUGS—See Plugs, Core Hole

CORED BARS—See Metals, Bearing

CORES, SPARK PLUG—See Mica; also Porcelain

CORES, TIRE VULCANIZING—See Molds, Tire Vulcanizing

CORK FLOATS—See Floats, Cork

CORK GASKETS FOR FORDS—See Gaskets, Cork

CORK PULLEY COVERS—See Covers, Cork Pulley Rim

CORK, Sheet

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa.

Mundet & Son, L. S., 11th & Berry Sts., Brooklyn, N. Y. (See page 411.)

Naco—See National Cork Products.

National Cork Products, 357-59 Ogden St., Newark, N. J. "Naco."

CORK WASHERS—See Washers, Cork

CORKS, Brake and Clutch Insert

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa.

Cork Insert Co., 164 Federal St., Boston, Mass

Diamond Cork Co., 59 Pearl St., New York, N. Y.

Mundet & Son, L., S. 11th & Berry Sts., Brooklyn, N. Y. (See page 411.)

Paddock Cork Co., 1209-17 De Kalb Ave., Brooklyn, N. Y. (See page 333.)

COST SYSTEM BOOKS—See Books, Accounting

COST SYSTEMS—See Books, Accounting

COTTER PIN PULLERS—See Pullers, Cotter Pin

COTTER PINS—See Pins, Cotter

COTTERS, SPLIT—See Pins, Cotter

COTTON BELTS—See Belts, Endless Fabric

COTTON FELT, UPHOLSTERY—See Moss, Upholstery

COTTON TIRE FABRICS—See Fabric, Cotton Tire

COTTON WASTE—See Waste, Cotton

COTTON WEBBING—See Webbing, Jute and Cotton

COUCHES, REPAIR—See Creepers, Repair

COUNTERBALANCES, Crankshaft, for Fords

Dunn Mfg. Co., 115 N. 15th St., Clarinda, Ia.

COUNTERBORES

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.

New Britain Tool & Mfg. Co., 5 Harvard St., New Britain, Conn.

Pratt & Whitney Co., 111 Broadway, New York, N. Y.

Production Tool Co. of America, Le Grande & Foster Aves., Detroit, Mich.

COUPLERS, Tractor

Buller Coupler Co., Hillsboro, Kans.

Reliable Tongue Hitch Mfg. Co., 26 W. Randolph St., Chicago, Ill.

COUPLERS, Trailer

Behlen Trailer Co., Vine & 15th Sts., Cincinnati, O.

Bruce Automatic Coupler Co., 3342 West River Drive, Minneapolis, Minn.

Buller Coupler Co., Hillsboro, Kans.

Corwin Coupler Co., 21 Osborn St., Wellsville, N. Y.

Ekern-Turk Mfg. Co., Pipestone, Minn.

Romine Mfg. Co., Goodland, Ind.

Troy Wagon Works Co., Troy, O.

Everything is listed under the NOUN or principal word

COUPLERS, Trailer, for Fords

Behlen Trailer Co., Vine & 15th Sts., Cincinnati, O.
 Buller Coupler Co., Hillsboro, Kans.
 Corwin Coupler Co., 21 Osborn St., Wellsville, N. Y.
 Eberhard Mfg. Co., 2724 Tennyson Rd., Cleveland, O.
 Litehaul—See Puffer-Hubbard Mfg. Co.
 Puffer-Hubbard Mfg. Co., 16th St. & 32d Ave., S. Minneapolis, Minn. "Litehaul."
 Romine Mfg. Co., Goodland, Ind.

COUPLINGS, BELT—See Fasteners, Belt

COUPLINGS, COMPRESSION—See Unions, Tubing

COUPLINGS, Flexible Shaft

(For Universal Joints—See Joints, Universal)

Karge-Baker Corp., Phoenix, N. Y.

COUPLINGS, GENERATOR—See Couplings, Magneto

COUPLINGS, HOSE—See Clamps, Hose

COUPLINGS, Magneto & Generator

Acme Motor Parts Corp., 355 E. Water St., Milwaukee, Wis.

Balley Mfg. Co., Union City, Ind.

Beehler Electric Equipment Co., Yuma, Colo.

Clark—See Dexter Co.

Climax Motor Devices, Chagrin Falls, O.

Dexter Co., I. H., 182 Greenwich Ave., Goshen, N. Y. "Clark."

Elsemann Magneto Corp., 22-33d St., Brooklyn, N. Y. (See page 567.)

Griptite—See Merchant & Evans Co.

Hardy—See Thermoid Rubber Co.

Magneto Attachment Co., 3608 Park Ave., New York, N. Y. "Mateco." (See page 81.)

Matco—See Magneto Attachment Co.

Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Griptite."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Norwalk Auto Parts Co., Norwalk, Conn.

Thermoid Rubber Co., Trenton, N. J. "Hardy." (See page 531.)

Thompson Bros., Philadelphia, Pa. "Uniflex."

Uniflex—See Thompson Bros.

Universal Motor Co., 39 Ceape St., Oshkosh, Wis.

COUPLINGS, PIPE—See Fittings, Pipe

COUPLINGS, SOLDERLESS—See Unions, Tubing

COUPLINGS, TRACTOR—See Couplers, Tractor

COUPLINGS, TRAILER—See Couplers, Trailer

COUPLINGS, TUBE—See Unions, Tubing

COVERS, AUTOMATIC RADIATOR—See Shutters, Automatic Radiator

COVERS, Automobile

(For covering automobiles when in the garage)

Arapahoe—See Brooks Tent & Awning Co.

Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Bemco—See B. E. Mfg. Co.

Brooks Tent & Awning Co., 1655 Arapahoe St., Denver, Colo. "Arapahoe."

Chicago Wholesale Saddlery & Mfg. Co., 727-41 W. Randolph St., Chicago, Ill.

Cleveland-Akron Bag Co., Cleveland, O. (See page 91.)

Clifton Mfg. Co., 223-27 Pleasant St., Waco, Tex.

Crown Paper & Bag Co., 405-07 Liberty St., Jackson, Mich.

Dafoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."

Deco—See Dafoe-Eustice Co.

Duk-Bak—See Dafoe-Eustice Co.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Fitzwell—See Niagara Fabric Mfg. Co.

Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y. "Shuredry."

Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Goss Co., J. C., 36 Woodbridge St., E. Detroit, Mich.

Hettrick Mfg. Co., Toledo, O.

Kennedy Car Liner & Bag Co., Shelbyville, Ind. (See page 297.)

Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)

Mikesell Brothers Co., 156 N. La Salle St., Chicago, Ill. "Pylox." (See page 530.)

Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Pylox—See Mikesell Brothers Co.

Red Seal—See Schaefer Tent & Awning Co.

Schaefer Tent & Awning Co., 1421-23 Larimer St., Denver, Colo. "Red Seal."

Schott Bros. Co., Buckeye & Main Sts., West Salem, O.

Shuredry—See Fulton Bag & Cotton Mills.

Ustus—See Dafoe-Eustice Co.

COVERS, Battery, for Fords

F-B. Electric & Mfg. Co.—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.) (See pages 491 to 494.)

COVERS, CANVAS SHIPPING—See Covers, Paper

COVERS, Cork Pulley Rim

(For covering fan pulleys to prevent belt slipping)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa.

COVERS, Fender

(Fabric covers designed to place over mud guards or fenders to protect them from being scratched when the car is being worked on.)

Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Buob & Schen, 500-10 Webster St., Cincinnati, O. (See page 595.)

Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.

Keep-Klean Auto Products Co., Inc., 499 E. 188th St., New York, N. Y. (See page 317.)

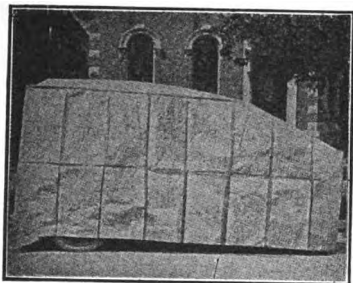
Powers Mfg. Co., Waterloo, Ia.

(See page 530.)

Everything is listed under the NOUN or principal word

COVERS, HOOD—See Covers, Radiator**COVERS, JOINT—See Boots, Steering
Knuckle****COVERS, Lamp***(Leather or fabric covers for head or side lamps)***B. E. Mfg. Co.**, 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)**Bemco—See B. E. Mfg. Co.****Chicago Wholesale Saddlery & Mfg. Co.**, 737-41 W. Randolph St., Chicago, Ill.**Economy Stay Co.**, Jefferson City, Mo.**Fitzwell—See Niagara Fabric Mfg. Co.****Gilbert Mfg. Co.**, 353 York St., New Haven, Conn.**Landers Bros. Co.**, Dept. A3, Toledo, O. (See page 263.)**Nathan Novelty Mfg. Co.**, Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)**Niagara Fabric Mfg. Co.**, 47 Greene St., New York, N. Y. "Fitzwell."**Premier Auto Novelty Mfg. Co.**, 275 W. Broadway, New York, N. Y.**COVERS, Magneto***(Leather or Fabric Covers)***Atlas Specialty Mfg. Co.**, 2110 So. Morgan St., Chicago, Ill. (See page 303.)**B. E. Mfg. Co.**, 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)**Bailey-Fitzwell Co.**, 1316 E. Grand Ave., Los Angeles, Cal.**Bemco—See B. E. Mfg. Co.****Campbell—See Perkins-Campbell Co.****Chicago Rawhide Mfg. Co.**, 1301 Elston Ave., Chicago, Ill.**Chicago Wholesale Saddlery & Mfg. Co.**, 737-41 W. Randolph St., Chicago, Ill.**Dafoe-Eustice Co.**, 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."**Deco—See Dafoe-Eustice Co.****Detroit Leather Works**, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)**Duk-Bak—See Dafoe-Eustice Co.****Economy Stay Co.**, Jefferson City, Mo.**Fitzwell—See Niagara Fabric Mfg. Co.****Gilbert Mfg. Co.**, 353 York St., New Haven, Conn.**Hager & Son, Chas.**, 1926 Broadway, New York, N. Y.**Leather Parts Co.**, 1619-21 Prospect St., Indianapolis, Ind.**Nathan Novelty Mfg. Co.**, Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)**Niagara Fabric Mfg. Co.**, 47 Greene St., New York, N. Y. "Fitzwell."**Perkins-Campbell Co.**, Cincinnati, O. "Campbell." (See page 299.)**Reinhold Belting & Supply Co.**, 491 Atlantic Ave., Brooklyn, N. Y.**Springfield Harness Co.**, 55-59 Dwight St., Springfield, Mass.**Stevens & Bro., A. A.**, 1224 Wabash Ave., Chicago, Ill.**Sutherland Leather & Felt Co.**, 139 Beaubien St., Detroit, Mich.**Ustus—See Dafoe-Eustice Co.****COVERS, METAL RADIATOR—See Shut-
ters, Metal Radiator****COVERS, Oil Hole***(Stamped or turned metal dustproof covers for oil holes)***Bay State Stamping Co.**, 280 Chandler St., Worcester, Mass. "Handy."**Bowen Products Corp.**, Auburn, N. Y. "Empress." (See page 313.)**Bowen Products Corp.**, 2760 W. Warren Ave., Detroit, Mich.**Detroit Lubricator Co.**, 5842-5986 Trumbull Ave., Detroit, Mich.**Empress—See Bowen Products Corp.****Greer, Frederic**, 2437 Michigan Ave., Chicago, Ill.**Handy—See Bay State Stamping Co.****Higgins Machine Works**, 26 Keystone St., Buffalo, N. Y.**Keeler Brass Co.**, 251-71 Godfrey Ave., Grand Rapids, Mich.**Long Bros.**, Broadway & Buckeye St., Kokomo, Ind. "Simplicity."**O. K. Mfg. Co.**, 40 Potomac St., Dayton, O.**Simplicity—See Long Bros.****Tucker, W. H. & C. F.**, Hartford, Conn. (See page 317.)**COVERS, Paper and Canvas Ship-
ping***(For protecting cars during shipment)***Cleveland-Akron Bag Co.**, Cleveland, O. (See page 91.)**Hettrich Mfg. Co.**, Toledo, O.**Kennedy Car Liner & Bag Co.**, Shelbyville, Ind. (See page 297.)**Nickerson Co.**, 173 State St., Boston, Mass.**Royal Textile Co.**, 200 Congress St., Boston, Mass.**Safepack Paper Mills**, 727 Atlantic Ave., Boston, Mass.**Seinsheimer Paper Co.**, York St. & McLean Ave., Cincinnati, O.**United States Tent & Awning Co.**, 229 N. Desplaines St., Chicago, Ill.**COVERS, PULLEY RIM—See Covers, Cork
Pulley Rim****COVERS, Radiator and Hood***(To prevent the water freezing in cold weather; For Metal Radiator Covers—See Shutters, Metal Radiator; For Automatic Shutters—See Shutters, Automatic Radiator)***A. P. Co.—See Atlantic-Pacific Mfg. Corp.****A & E Auto Top Co.**, 33-35 E. Cross St., Ypsilanti, Mich.**Accurate Cover Co.**, 373 Canal St., New York, N. Y.**Allen Auto Specialty Co.**, 16 W. 61st St., New York, N. Y. (See page 297.)**Angelus—See Parker & Waterman Mfg. Co.****Antidam—See Glover Equipment Co.****Anton & Ackerman Co.**, 122-24 Kansas Ave., Topeka, Kans.**Atlantic-Pacific Mfg. Corp.**, 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co." (See page 579.)**Atlas Specialty Mfg. Co.**, 2110 So. Morgan St., Chicago, Ill. (See page 303.)**Ayers & Sons, Wm.**, Cumberland & Fourth Sts., Philadelphia, Pa.**B. E. Mfg. Co.**, 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)**Badger—See Wisconsin Top Co.**

Everything is listed under the NOUN or principal word



Kennedy Auto Storage Covers

To meet the need of an inexpensive and efficient cover for automobiles while in dead storage we are making a paper cover, which is proving the right thing for this purpose.

These covers are made of strong, heavy paper, properly reinforced to prevent tearing.

They protect the car against dirt, dust and moisture and will prevent the polished portions from tarnishing and the finish from checking in cold weather.

These covers are salable to individual car owners at a good profit as well as to furnish the dealer a protection for his stock of new cars.

We make them in four sizes: 7 Passenger, 5 Passenger, Ford Special, Electric Winter will soon be here and dealers can handle these covers with satisfaction and profit. Further information on request.

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"PERFECT PROTECTION FOR SPARE SHOES"

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Top Recovers

Back Curtains

Side Curtains

Pocketed Door Pads

Special money making proposition on all above items on Ford Sizes. Get quotations.

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Evans, South and Woodrow Sts.
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FINISHED OR SEMI-FINISHED

CRANKSHAFTS, CONNECTING RODS, SPINDLES,
ALL TYPES OF MACHINE KEYS

SEND US YOUR INQUIRIES

The William Leard Co., New Brighton, Pa.

Please mention The Automobile Trade Directory

COVERS, Radiator and Hood (Continued)

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
 Bemco—See B. E. Mfg. Co.
 Bliss Auto Top Co., C. P., 1351 Court Pl., Denver, Colo.
 Buob & Schenck, 500-10 Webster Ave., Cincinnati, O. (See page 895.)
 Campbell—See Perkins-Campbell Co.
 Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
 Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
 Champion Auto Top Co.—See Frankel Specialties Corp.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Frost King."
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
 Co-Zee—See Omaha Auto Top Co.
 Crawford Mfg. Co., 211 N. Foushee St., Richmond Va.
 D & D—See Droutman Mfg. Co.
 Dafeoe-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."
 Deco—See Dafeoe-Eustice Co.
 Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich. "Pro-tec-Shun."
 Droutman Mfg. Co., 302-06 W. 53rd St., New York, N. Y. "D. & D."
 Duk-Bak—See Dafeoe-Eustice Co.
 Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.
 Esco—See Economy Seat Co.
 Fitzwell—See Niagara Fabric Mfg. Co.
 Fox-Cobe Mfg. Co., 280 Ninth Ave., New York, N. Y. "Rad-a-thaw." (See page 260.)
 Frankel Specialties Corp., 356 W. 50th St., New York, N. Y. (Sole Distributors for Champion Auto Top Co., New York, N. Y.)
 Frost King—See Cincinnati Auto Specialty Co.
 Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.
 Gilbert Mfg. Co., 353 York St., New Haven, Conn.
 Glover Equipment Co., 412 N. Capital Ave., Indianapolis, Ind. "Antidam."
 Goldin Mfg. Co., 127-31 S. Forsyth St., Atlanta, Ga.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Jack Frost."
 Goss Co., J. C., 36 Woodbridge St., E., Detroit, Mich.
 Graessam Auto Co., 258 W. 69th St., New York, N. Y.
 Harrington Auto Top Co., 310 Virginia St., Sioux City, Iowa.
 Hettrick Mfg. Co., Toledo, O.
 Hodes-Zink Mfg. Co., 112 W. State St., Fremont, O. "Sure-Fit."
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn. "Zero King."
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Frost King" Covers.) (See page 179.)
 Jack Frost—See Gordon Co.
 Kaplan Specialty Co., 140 Halsey St., Newark, N. J.
 Keystone Canvas Goods & Flag Co., 1012-18 Filbert St., Philadelphia, Pa.
 McKinnon Dash Co., Buffalo, N. Y. (See page 486.)
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Mayhew—See Sutter-Mayhew Co.
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 929.)
 Myar Mfg. Co., 3026-28 Locust St., St. Louis, Mo.
 Nathan Novelty Mfg. Co., Dept. T.D., 55 Fifth Ave., New York, N. Y. (See page 165.)
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
 Nickerson Co., 173 State St., Boston, Mass.
 Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)
 Only Grease Gun Co., Newton, Ia.
 Parker & Waterman Mfg. Co., 1203 W. Washington St., Los Angeles, Cal. "Angelus."
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)
 Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 297.)
 Powers Mfg. Co., Waterloo, Iowa. (See page 530.)
 Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
 Prince Auto Fabric Mfg. Co., 4104 Fort Hamilton Ave., Brooklyn, N. Y.
 Pro-Tec-Shun—See Detroit Slip Cover Co.
 Rad-a-thaw—See Fox-Cobe Mfg. Co.
 Hanson Auto Top & Equipment Co., 103-95 Fountain St., Providence, R. I.
 Simon & Co., S. C., 825 N. Second St., Philadelphia, Pa.
 Standard Top Co., 596-98 Market St., Wilkes-Barre, Pa.
 Sure-Fit—See Hodes-Zink Mfg. Co.
 Sutter-Mayhew Co., 684 Canfield Ave., Detroit, Mich. "Mayhew."
 Tatco—See Thomas Auto Top Co.
 Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.
 Universal Trimming Co., 3435 Michigan Ave., Chicago, Ill.
 Ustus—See Dafeoe-Eustice Co.
 Wilcox Co., M. I., Water St., Toledo, O.
 Wisconsin Top Co., Racine, Wis. "Badger." (See page 290.)
 Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill.
 Zero King—See Holden Mfg. Co.

COVERS, Radiator and Hood, for Fords

(To prevent the water freezing in cold weather; For Metal Radiator Covers—See Shutters, Metal Radiator; For Automatic Shutters—See Shutters, Automatic Radiator)

Accurate Cover Co., 373 Canal St., New York, N. Y.
 A. P. Co.—See Atlantic-Pacific Mfg. Corp.
 Angelus—See Parker & Waterman Mfg. Co.
 Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.
 Atlantic-Pacific Mfg. Corp., 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co." (See page 579.)
 Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)
 Ayers & Sons, Wm., Cumberland & Fourth Sts., Philadelphia, Pa.
 B. E. Mfg. Co., 220 13th St., Long Island City, N. Y. "Bemco." (See page 290.)
 Badger—See Wisconsin Top Co.
 Bemco—See B. E. Mfg. Co.

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*Seat Covers—[Slip] Roofs—
Side Curtains—Back Curtains—
—With Plate Glass Windows*

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Heavy—steady and ever increasing demand.

Our proposition certain to show you a splendid sales increase.

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None Better

TIRE COVERS

For Every Make of Tire

TOP HOOD COVERS FORD SPECIALTIES
TOOL ROLLS RADIATOR COVERS
HOOD COVERS Etc., Etc.

Send for Descriptive Matter

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Top Recoverys	Boots
Tool Bags and Kits	Bottle Cases
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Special Work from Blue Prints	

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New York Office
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Chicago Office
1329 S. Michigan Avenue

Please mention The Automobile Trade Directory

COVERS, Radiator and Hood, for Fords (Continued)

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
 Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 895.)
 Campbell—See Perkins-Campbell Co.
 Central Auto Top & Leather Co., 421 N. Capitol Ave., Indianapolis, Ind.
 Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
 Champion Chemical Co., Linden Ave. & Monroe St., Springfield, O.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Frost King."
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Copp Co., George W., 204-14 14th St., Long Island City, N. Y. (See page 123.)
 Co-Zee—See Omaha Auto Top Co.
 Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
 D & D—See Droutman Mfg. Co.
 Droutman Mfg. Co., 302-06 W. 53rd St., New York, N. Y. "D & D."
 Foud—See Hopewell Bros.
 Frost King—See Cincinnati Auto Specialty Co.
 Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
 Gilbert Mfg. Co., 353 York St., New Haven, Conn.
 Goldin Mfg. Co., 127-31 S. Forsyth St., Atlanta, Ga.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Jack Frost."
 Goss Co., J. C., 36 Woodbridge St., S., Detroit, Mich.
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn. "Zero King."
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Frost King" Covers.) (See page 179.)
 Hopewell Bros., Watertown, Mass.
 "Foud." (See page 865.)
 Jack Frost—See Gordon Co.
 Kaplan Specialty Co., 140 Halsey St., Newark, N. J.
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 Myar Mfg. Co., 3026-28 Locust St., St. Louis, Mo.
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
 Nickerson Co., 173 State St., Boston, Mass.
 Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)
 Parker & Waterman Mfg. Co., 1203 W. Washington St., Los Angeles, Cal. "Angelus."
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 200.)
 Phoenix Carriage Co., Cincinnati, O. (See page 297.)
 Phoenix Tent & Awning Co., First & Monroe Sts., Phoenix, Ariz.
 Powers Mfg. Co., Waterloo, Ia. (See page 530.)
 Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
 Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
 R-E—See Rose Mfg. Co.
 Rose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."
 Simon & Co., S. C., 835 N. Second St., Philadelphia, Pa.
 Standard Top Co., 596-98 Market St., Wilkes-Barre, Pa.
 Stephens Rubber Co., A. J., 1437 Chestnut St., Kansas City, Mo.

Tatco—See Thomas Auto Top Co.
 Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."
 Wilcox Co., M. I., Water St., Toledo, O.
 Wisconsin Top Co., Racine Wis. "Badger." (See page 299.)
 Zero King—See Holden Mfg. Co.

COVERS, RIM—See Covers, Spare Tire

COVERS, SEAT—See Covers, Slip

COVERS, SHIPPING—See Covers, Paper and Canvas Shipping

COVERS, Slip

(See also Tops, Automobile)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
 Accurate Cover Co., 373 Canal St., New York, N. Y.
 Alper Auto Top Co., 31 Willow St., Waterbury, Conn.
 Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
 Arizona Auto Top Co., 451 N. Central Ave., Phoenix, Ariz.
 Artcraft—See General Top Co.
 Atlanta Auto Top & Trimming Co., 155-57 Edgewood Ave., Atlanta, Ga.
 Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)
 Auto Cape Top Co., 2334-38 S. Michigan Ave., Chicago, Ill.
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 209.)
 Badger—See Wisconsin Top Co.
 Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo. "Summa."
 Bemco—See B. E. Mfg. Co.
 Bliss Auto Top Co., C. P., 1351 Court Pl., Denver, Colo.
 Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 895.)
 Campbell—See Perkins-Campbell Co.
 Casco—See Cincinnati Auto Specialty Co.
 Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
 Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
 Champion Auto Top Co.—See Frankel Specialties Corp.
 Chicago Auto Equipment Co., 808-10 W. Jackson Blvd., Chicago, Ill.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Columbia Tire & Top Co., 922 Commonwealth Ave., Boston, Mass.
 Consolidated Auto Top Co., 4049-59 St. Clair Ave., Cleveland, O.
 Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
 Cooling Carriage Co., 406 French St., Wilmington, Del.
 Copp Co., George W., 206-14 14th St., Long Island City, N. Y. (See page 123.)
 Cov-O-Alls—See Gordon Co.
 Co-Zee—See Omaha Auto Top Co.
 Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
 D & D—See Droutman Mfg. Co.
 Droutman Mfg. Co., 302-06 W. 53rd St., New York, N. Y. "D & D."
 Easy-On—See Gordon Co.
 Englander Co., 5940 Second St., W., Detroit, Mich.
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Casco" Covers.) (See page 179.)

Everything is listed under the NOUN or principal word

COVERS, Slip (Continued)

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.
 Fittwell—See Niagara Fabric Mfg. Co.
 Frankel Specialties Corp., 356 W. 50th St., New York, N. Y. (Sole Distributors for Champion Auto Top Co., New York, N. Y.)
 Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
 Geco—See Glover Equipment Co.
 General Top Co., 4059 St. Clair Ave., Cleveland, O. "Artcraft."
 Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.
 Glover Equipment Co., 412 N. Capitol Ave., Indianapolis, Ind. "Geco."
 Goldin Mfg. Co., 130-32 Marietta St., Atlanta, Ga.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On," "Jiffy," "Cov-O-Alls."
 Graessam Auto Co., 258 W. 69th St., New York, N. Y.
 Harrington Auto Top Co., 310 Virginia St., Sioux City, Ia.
 Hayes & Miller Co., 518-22 E. 57th St., New York, N. Y.
 Herrity Co., E. A., 60 Summer St., Stamford, Conn.
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Casco" Covers.) (See page 179.)
 Hyatt Auto Top Co., 210-20 Wood St., Trenton, N. J.
 Jiffy—See Gordon Co.
 Johnston Commercial Body Co., Fort Smith, Ark.
 Jones & Pimm Co., 423 W. Onondaga St., Syracuse, N. Y.
 Kaplan Specialty Co., 140 Halsey St., Newark, N. J.
 Lamco—See Lehman Mfg. Co.
 Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
 Lehman Mfg. Co., 310 Fourth St., Cannelton, Ind. "Lamco." (See page 145.)
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 McDonald Bros., 1005-07 E. Pike St., Seattle, Wash.
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Mobile Top Co., 28 Selden Ave., Detroit, Mich.
 Moore & Co., 647 W. 50th St., New York, N. Y. "Right Fit."
 Myar Mfg. Co., 3026-28 Locust St., St. Louis, Mo.
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. "Presto." (See page 165.)
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fittwell."
 Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)
 Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 297.)
 Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
 Presto—See Nathan Novelty Mfg. Co.
 Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
 Production Auto Top Co., 373 Fourth Ave., Long Island City, N. Y.
 Right Fit—See Moore & Co.
 Samson Auto Top & Equipment Co., 103-05 Fountain St., Providence, R. I.
 Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
 Standard Top Co., 596-98 Market St., Wilkes-Barre, Pa.
 Steiner, Jos., 409 N. Seventh St., Manitowoc, Wis.

Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y. "Wear-Well."
 Summa—See Baker-Lockwood Mfg. Co.
 Tatco—See Thomas Auto Top Co.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.
 Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."
 Universal Trimming Co., 2425 Michigan Ave., Chicago, Ill.
 Wear-Well—See Sterling Top & Equipment Co.
 Wilcox Co., M. L., Water St., Toledo, O.
 Williams Auto Top Works, C. T., 1107 Seventh St., Wichita Falls, Tex.
 Wisconsin Top Co., Racine Wis. "Radger." (See page 299.)

COVERS, Slip, for Fords

(See also Top)

Accurate Cover Co., 373 Canal St., New York, N. Y.
 Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.
 Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)
 Badger—See Wisconsin Top Co.
 Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo. "O-So-Klene."
 Bemco—See B. E. Mfg. Co.
 Casco—See Cincinnati Auto Specialty Co.
 Central Auto Top & Leather Co., 421 N. Capitol Ave., Indianapolis, Ind.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."
 Co-Zee—See Omaha Auto Top Co.
 Cov-O-Alls—See Gordon Co.
 Crawford Mfg. Co., 311 N. Foushee St., Richmond, Va.
 D & D—See Droutman Mfg. Co.
 Droutman Mfg. Co., 302-06 W. 53rd St., New York, N. Y. "D & D."
 Easy-On—See Gordon Co.
 Fittwell—See Niagara Fabric Mfg. Co.
 Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
 Goldin Mfg. Co., 130-32 Marietta St., Atlanta, Ga.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On," "Jiffy," "Cov-O-Alls."
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Casco" Covers.) (See page 179.)
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.
 Jiffy—See Gordon Co.
 Kaplan Specialty Co., 140 Halsey St., Newark, N. J.
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Myar Mfg. Co., 3026-28 Locust St., St. Louis, Mo.
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. "Presto." (See page 165.)
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fittwell."
 O-So-Klene—See Baker-Lockwood Mfg. Co.
 Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)
 Perkins-Campbell Co., Cincinnati, O. (See page 299.)
 Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 297.)
 Powers Mfg. Co., Waterloo, Iowa. (See page 530.)
 Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Everything is listed under the NOUN or principal word

COVERS, Slip, for Fords (Continued)

Presto—See Nathan Novelty Mfg. Co.
Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
R-E—See **Roose Mfg. Co.**
Roose Mfg. Co., 827-83 W. Main St., Louisville, Ky. "R-E."
Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.
Ustus Products Co., 4042 W. Jefferson St., Detroit, Mich.
Western Auto Top Co., 1208-10 Jackson St., Omaha, Neb.
Wilcox Co., M. I. Water St., Toledo, O.
Wisconsin Top Co., Racine, Wis. "Badger." (See page 289.)

COVERS, Spare Tire

(For covering spare tires and tubes; also for demountable rims or wheels)

A. P. Co.—See Atlantic-Pacific Mfg. Corp.
Accurate Cover Co., 373 Canal St., New York, N. Y.
Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 297.)
Angelus—See Parker & Waterman Mfg. Co.
Angelus Rimfit—See Parker & Waterman Mfg. Co.
Anton-Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.
Atlantic-Pacific Mfg. Corp., 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co." (See page 579.)
Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. "Howard," "Chicago." (See page 303.)
B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)
Badger—See Wisconsin Top Co.
Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."
Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
Bemco—See B. E. Mfg. Co.
Betterall—See Prince Auto Fabric Mfg. Co.
Burlock & Co., Chas., Wausau, Wis.
Campbell—See Perkins-Campbell Co.
Casco—See Cincinnati Auto Specialty Co.
Champion Auto Top Co.—See Frankel Specialties Corp.
Chicago—See Atlas Specialty Mfg. Co.
Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."
Cleveland-Akron Bag Co., Cleveland, O. (See page 91.)
Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
Co-Zee—See Omaha Auto Top Co.
Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
D & D—See Droutman Mfg. Co.
Droutman Mfg. Co., 302-06 W. 53rd St., New York, N. Y. "D & D."
Dafos-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Duk-Bak," "Deco," "Ustus."
Deco—See Dafos-Eustice Co.
Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich.
Duk-Bak—See Dafos-Eustice Co.
Easy-On—See Gordon Co.
Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."
Edelstone Fabric Co., Wm. W., 51 Chardon St., Cambridge, Mass. "Wedco."
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Esco—See Economy Seat Co.
Fitwell—See Bailey & Fitwell Co.
Fitzwell—See Niagara Fabric Mfg. Co.
Frankel Specialties Corp., 356 W. 50th St., New York, N. Y. (Sole Distributors for Champion Auto Top Co., New York, N. Y.)
Gilbert Mfg. Co., 353 York St., New Haven, Conn.
Golden Mfg. Co., 127-31 S. Forsyth St., Atlanta, Ga.
Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On."
Goss, J. C., 36 Woodbridge St., E., Detroit, Mich.
H. B.—See Hopewell Bros.
Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Casco" Covers.) (See page 179.)
Hopewell Bros., Watertown, Mass. "H. B." "Tirex." "Security." (See page 965.)
Howard—See Atlas Specialty Mfg. Co.
Keystone—See Nathan Novelty Mfg. Co.
Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)
Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
Myar Mfg. Co., 3026-28 Locust St., St. Louis, Mo.
Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. "Keystone," "Presto." (See page 165.)
Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
Omaha Auto Top Co., Omaha, Neb. "Co-zee." (See page 303.)
Parker & Waterman Mfg. Co., 1203 W. Washington St., Los Angeles, Cal. "Angelus," "Angelus Rimfit."
Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)
Powers Mfg. Co., Waterloo, Ia. (See page 530.)
Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.
Presto—See Nathan Novelty Mfg. Co.
Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y. "Betterall."
Protex-a-Tire—See Stephens Rubber Co.
Security—See Hopewell Bros.
Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Protex-a-Tire."
Tatco—See Thomas Auto Top Co.
Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."
Tirex—See Hopewell Bros.
Wedco—See Edelstone Fabric Co.
Weidely Accessories Co., 528 Massachusetts Ave., Indianapolis, Ind.
Wisconsin Top Co., Racine, Wis. "Badger." (See page 299.)
Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill.

COVERS, Spare Tire, for Fords

(For covering spare tires and tubes; also for demountable rims or wheels)

A. P. Co.—See Atlantic-Pacific Mfg. Corp.
Accurate Cover Co., 373 Canal St., New York, N. Y.
Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 297.)
Angelus—See Parker & Waterman Mfg. Co.
Angelus Fitbest—See Parker & Waterman Mfg. Co.
Anton & Ackermann Co., 132-34 Kansas Ave., Topeka, Kans.

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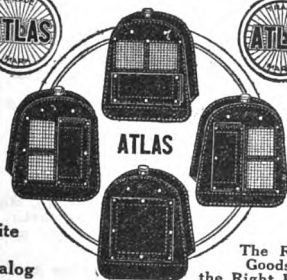
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Please mention The Automobile Trade Directory

COVERS, Spare Tire, for Fords (Continued)

- Atlantic-Pacific Mfg. Corp., 129 Atlantic Ave., Brooklyn, N. Y. "A. P. Co." (See page 579.)
- Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. "Ezy," "Howard." (See page 303.)
- B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)
- Bemco—See B. E. Mfg. Co.
- Casco—See Cincinnati Auto Specialty Co.
- Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."
- Copp Co., George W., 200-14 14th St., Long Island City, N. Y. (See page 123.)
- Crawford Mfg. Co., 311 N. Foushee St., Richmond, Va.
- D & D—See Droutman Mfg. Co.
- Droutman Mfg. Co., 302-06 W. 53rd St., New York, N. Y. "D & D."
- Easy-On—See Gordon Co.
- Ezy—See Atlas Specialty Mfg. Co.
- Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On."
- Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn.
- Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Casco" Covers.) (See page 179.)
- Howard—See Atlas Specialty Mfg. Co.
- Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
- Myar Mfg. Co., 3026-28 Locust St., St. Louis, Mo.
- Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
- Parker & Waterman Mfg. Co., 1203 W. Washington St., Los Angeles, Cal. "Angelus," "Angelus Fitbest."
- R-E—See Roose Mfg. Co.
- Roose Mfg. Co., 827-23 W. Main St., Louisville, Ky. "R-E."
- Ustus Products Co., 4042 W. Jefferson St., Detroit, Mich.

COVERS, SPARE WHEEL—See Covers, Spare Tire**COVERS, SPRING—See Cups, Spring Leaf Lubricating****COVERS, STARTING CRANK—See Holders, Starting Crank****COVERS, STEERING KNUCKLE—See Boots, Steering Knuckle****COVERS, Steering Wheel Rim**

(Leather, Rubber or Fabric Covers to lace or button on steering wheel rim to improve the grip)

- Alpha—See Parker, Stearns & Co.
- Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)
- B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)
- Bemco—See B. E. Mfg. Co.
- Fitzwell—See Niagara Fabric Mfg. Co.
- Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
- Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
- Parker, Stearns & Co., 286 Sheffield Ave., Brooklyn, N. Y. "Alpha."
- Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill.

COVERS, TIRE—See Covers, Spare Tire**COVERS, Top**

(See also Tops, Automobile)

- A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
- Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)
- B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)
- Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
- Bemco—See B. E. Mfg. Co.
- Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 895.)
- Burlock & Co., Chas., Wausau, Wis.
- Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
- Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
- Cleveland-Akron Bag Co., Cleveland, O. (See page 91.)
- Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
- Co-Zee—See Omaha Auto Top Co.
- Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich. "Pro-Tec-Shun."
- Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.
- Fitzwell—See Niagara Fabric Mfg. Co.
- Geco—See Glover Equipment Co.
- Glover Equipment Co., 412 N. Capitol Ave., Indianapolis, Ind. "Geco."
- Kaplan Specialty Co., 140 Halsey St., Newark, N. J.
- Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
- Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
- Omaha Auto Top Co., Omaha, Neb. "Co-zee." (See page 303.)
- Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 297.)
- Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
- Pro-Tec-Shun—See Detroit Slip Cover Co.
- Standard Auto Top & Body Co., 1335 Race St., Philadelphia, Pa.
- Universal Trimming Co., 2425 Michigan Ave., Chicago, Ill.

COVERS, Top, for Fords

(See also Tops, Automobile)

- Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)
- Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
- Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. (See page 895.)
- Donlin Auto Co., C. A., Hopkins, Mo.
- Easy-On—See Gordon Co.
- Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill.
- Fitzwell—See Niagara Fabric Mfg. Co.
- Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
- Gordon Co., J. P., 555 N. Fourth St., Columbus, O. "Easy-On."
- Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."
- Kaplan Specialty Co., 140 Halsey St., Newark, N. J.
- Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
- Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
- Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 297.)

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Curtain silks, cords, rollers, sticks, lights, celluloid, other fixtures.

Bows, bow sockets, rests, bow linings.

Webbing, buckram, burlap, duck, cotton batting, coach wadding, curled hair, moss.

Gimp and welt of all kinds, and finishing ends.

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Moldings of all kinds and tips.

Door hinges, handles, locks and all interior hardware.

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COVERS, Top, for Fords (Continued)

Premier Auto Novelty Mfg. Co., 875 W. Broadway, New York, N. Y.
 R-E—See **Roose Mfg. Co.**
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
 Sure-Fit—See **Hodes-Zink Mfg. Co.**

COVERS, UNIVERSAL JOINT—See Boots, Steering Knuckle**COVERS, UPHOLSTERY—See Covers, Slip****COVERS, WHEEL—See Covers, Steering Wheel Rim; also Covers, Spare Tire****COWL BOARDS FOR FORDS—See Cows, Dash****COWL LIGHT REFLECTING MIRRORS—See Mirrors, Cowl Light Reflecting****COWL PROTECTORS—See Covers, Fender****COWLS, Dash and Cowl Boards, for Fords**

Aske Moore Corp., 19 Lake Ave. N., Duluth, Minn.
 Builders Mfg. Co., 828-30 N. Wells St., Chicago, Ill.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill.
 Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y.
 Motor Products Corporation, 11801 Mack Ave., Detroit, Mich. (See page 757.)
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)
 W-A—See **Whetstone & Co.**
 Warnerlite Products Corp., Davenport, Iowa.
 Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

CRADLES, Portable Steel

(Steel Cradle or Holder upon which car is fastened and so constructed that car can be turned over to facilitate making repairs.)

Morrison Corp., Apollo Bldg., Pittsburgh, Pa.
 Turn-Auto Corp., 149 Broadway, New York, N. Y.

CRADLES, Radiator, for Fords

(Stamped steel plate or support to carry weight of radiator and prevent side lugs from being damaged)

Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Dependable—See **Gahm-McCormick Co.**
 Gahm-McCormick Co., 806 E. Main St., Streator, Ill. "Dependable."
 (See page 171.)
 Kees Mfg. Co., F. D., 24 High St., Beatrice, Neb.
 Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.

CRANES, DRAGS AND JACKS, Truck Wheel Removing

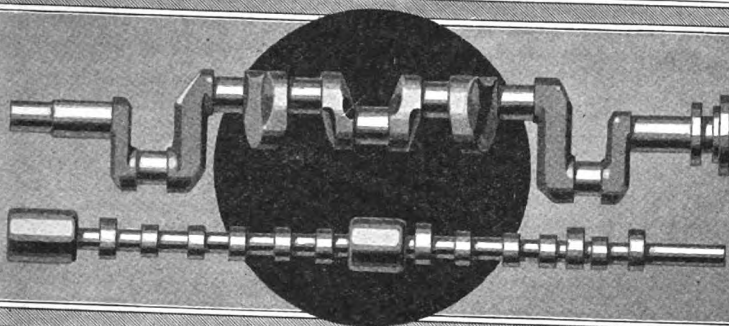
Frayer-Miller Co., Bank of Commerce Bldg., Columbus, O.
 Thomson Auto Specialties Co., 80-90 W. Spring St., Columbus, O.
 K & S—See **Water Street Garage & Machine Co.**
 Water Street Garage & Machine Co., 728-30 Water St., So. Brownsville, Pa. "K & S."

CRANES, Portable

(For Chain Blocks or Hoists; See Blocks or Chains, Hoist)

Acme—See **Moore Co.**
 Alben Co., 27th Ave. & Wahl St., Milwaukee, Wis. "Giant."
 Beatty Machine & Mfg. Co., Hammond, Ind. "Hammond."
 Boston & Lockport Block Co., 134 Condor St. (E. Boston), Boston, Mass.
 Bradney Machine Co., Middletown, N. Y.
 Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O. "Brownhoist."
 Brownhoist—See **Brown Hoisting Machinery Co.**
 Browning & Co., Victor R., 17701 Lake Shore Blvd., Cleveland, O.
 Cameron Engineering Co., Washington, N. J.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Canton Foundry & Machine Co., Third St. & Savannah Ave., S. E., Canton, O.
 Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill.
 Cleveland Chain & Mfg. Co., Cleveland, O.
 Champion—See **Milton & Son.**
 Giant—See **Alben Co.**
 Hammond—See **Beatty Machine & Mfg. Co.**
 Hercules—See **Soper, Geo. E.**
 Hillite—See **Manley Mfg. Co.**
 Holmes Co., Ernest, Chattanooga, Tenn.
 Imperial—See **Ingersoll-Rand Co.**
 Imperial—See **Moore Co.**
 Ingersoll-Rand Co., 11 Broadway, New York, N. Y. "Imperial."
 Keystone Garage Equipment Co., 201 Devonshire St., Boston, Mass.
 Kimball's, 137 Ashmun St., New Haven, Conn.
 Klemme Mfg. Co., A. C., 114 Harrison St., Davenport, Iowa.
 Lafayette Engineering Co., 208 S. Fourth St., Lafayette, Ind.
 Lane Bros. Co., 48 Prospect St., Poughkeepsie, N. Y.
 Manley Mfg. Co., York, Pa. "Hillite."
 (See page 661.)
 Miller—See **Portable Tool Supply Co.**
 Milton & Son, S. G., 1104 Elk St., Franklin, Pa. "Champion."
 Moore Co., Franklin, Winsted, Conn. "Acme," "Imperial."
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Portable Tool Supply Co., 256 Main St., Buffalo, N. Y. "Miller."
 Pull-U-Out Products Co., 727 Clark Ave., St. Louis, Mo.
 Soper, Geo. E., 154 E. Water St., Kankakee, Ill. "Hercules."
 Spidel, J. G., W. Buttonwood & Gorden Sts., Reading, Pa.
 Toepper's Sons, Frank, 45 National Ave., Milwaukee, Wis.
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 661.)

Everything is listed under the NOUN or principal word



The Largest Manufacturer Finishing Both Crankshafts And Camshafts Exclusively

If you require finished crankshafts and camshafts in large quantities with dependable and consistent shipments, know we can be of service to you.

Our facilities and experience are the reason, and will welcome a visit from you that we may prove this.



The JACKSON MOTOR SHAFT COMPANY
JACKSON MICHIGAN

Please mention The Automobile Trade Directory

CRANES, Portable (Continued)

Weingraf Auto Hoist Co., New Haven, Conn.
Western Mfg. Co., Sixth Ave. E. & S. Third
St., Oskaloosa, Iowa.

CRANES, Truck

(For applying to trucks to facilitate loading;
and wrecking; for Truck Winches—See Winches
Truck)

Duken Service Crane Co., 933 E. 43d St.,
Chicago, Ill.
Hendrickson Truck Crane Co., Peoples Gas
Bldg., Chicago, Ill.
Manley Mfg. Co., York, Pa. (See page 661.)
Sasgen Derrick Co., 3101 Grand Ave., Chi-
cago, Ill.

**CRANK CASE BOLTS FOR FORDS—See
Bolts, Special**

**CRANK CASE BREATHERS FOR FORDS
—See Breathers, Crank Case**

**CRANK CASE SUPPORTS—See Brackets
or Supports, Engine Repair for Fords**

**CRANK HANDLES—See Handles, Starting
Crank**

**CRANK HOLDERS—See Holders, Starting
Crank**

**CRANK LOCKS FOR FORDS—See Locks,
Starting Crank**

**CRANK PIN GRINDERS—See Grinders,
Crank Pin**

**CRANK PIN LATHES—See Lathes, Crank
Pin**

**CRANK PIN TRUING TOOLS—See Tools,
Crank Pin Truing**

**CRANK RATCHET PINS FOR FORDS—
See Pins, Crank Ratchet**

**CRANK RELEASES FOR FORDS—See
Cranks, Safety Starting**

**CRANK SHAFT BUSHINGS FOR FORDS—
See Bushings, Bronze**

**CRANK SHAFT COUNTERBALANCES
FOR FORDS—See Counterbalances,
Crankshaft**

**CRANK SHAFT GRINDING TOOLS—See
Tools, Crank Pin Truing**

**CRANK SHAFT THRUST BEARINGS FOR
FORDS—See Bearings, Crank Shaft
Thrust**

**CRANK SHAFT TURNING ATTACH-
MENTS—See Attachments, Lathe Crank-
shaft Turning**

**CRANK SHAFTS—See Crankshafts, Fin-
ished and Machined**

CRANKS, Safety Starting

(To prevent bodily injury from back kicks)

Oulton Mfg. Co., 144 Liverpool St. (E. Bos-
ton), Boston, Mass.
Shaw Mfg. Co., 1 Columbia St., Lynn,
Mass. (See page 367.)
Whitcomb Machine Co., Monroe, Wis.

CRANKS, Safety Starting, for Fords

(To prevent bodily injury from back kicks)

Atlanta Specialty Mfg. Co., 2941-43 Locust St.,
St. Louis, Mo.

Automotive Exchange of America, Hippo-
drome Annex, Cleveland, O. (Sole Distribu-
tors for Palmer Auto Parts Co., Wooster,
O. "Ketch-A-Kick.")

Bear—See Robinson, E.

Bear Mfg. Co., Rock Island, Ill.
(See page 405.)

Carson Mfg. Co., 9 S. Eighth St., Richmond.
Ketch-A-Kick—See Automotive Exchange of
America.

Lawco Kantkick—See Lawson Co.

Lawson Co., F. H., Dept. D, Cincinnati, O.
"Lawco Kantkick." (See page 377.)

Miller Mfg. Co., E. L., 22 W. Third St., Kan-
sas City, Mo. "Non-kick."

Non-Kick—See Miller Mfg. Co.

Palmer Auto Parts Co.—See Automotive Ex-
change of America.

Robinson, E., 2674 Atlantic Ave., Brooklyn,
N. Y. "Bear."

Shipley & Co., Rochester, Ind.

Whitcomb Machine Co., Monroe, Wis.

**CRANKSHAFTS, Finished or Ma-
chined**

(For Crankshafts in the rough—See Forgings, Drop)

Atlas Mfg. Co., County Line St. & Court Pl.,
Fostoria, O.

Automobile Crankshaft Corp., Detroit,
Mich. (See page 239.)

Gill & Sons Forge & Machine Works, P. H.,
Lorraine & Otsego Sts., Brooklyn, N. Y.

Jackson Motor Shaft Co., Jackson, Mich.
(See page 307.)

Jefferson Forge Products Co., Detroit,
Mich. (See page 947.)

Ladish Drop Forge Co., Oudahy, Wis.
(See page 385.)

Leard Co., Wm., New Brighton, Pa.
(See page 297.)

Michigan Crank Shaft Co., Lansing, Mich.
Moltrup Steel Products Co., Beaver
Falls, Pa. (See page 821.)

Park Drop Forge Co., Cleveland, O.
(See page 309.)

Standard Gauge Steel Co., Beaver Falls,
Pa. (See page 247.)

Sundberg Co., 1024 W. Kinzie St., Chicago, Ill.
Union Drop Forge Co., 388 W. Grand Ave.,
Chicago, Ill.

Union Switch & Signal Co., Swissvale, Pa.

CREEPERS, Repair

(For lying on when making repairs underneath a car)

Anch and Co., Inc., 10-24 W. 61st St., New
York, N. Y. (Eastern and Southern Dis-
tributors for Foster Creepers.)
(See page 247.)

Badger Mfg. Corp., 160-68 Clinton St.,
Milwaukee, Wis. (See page 171.)

Banner Accessory Mfg. Co., 2629-33 La Salle
St., St. Louis, Mo.

Barcalo Mfg. Co., 225 Louisiana St., Buffalo,
N. Y.

Boyle Mfg. Co., 21 Sutter St., Los Angeles,
Cal. (See page 183.)

Brooksmith Mfg. Co., 1856-60 Menard St., St.
Louis, Mo.

Broome Mfg. Co., W. J., 1016 W. 39th St., Los
Angeles, Cal.

Chattanooga Wheelbarrow Co., 1221 E. Main
St., Chattanooga, Tenn.

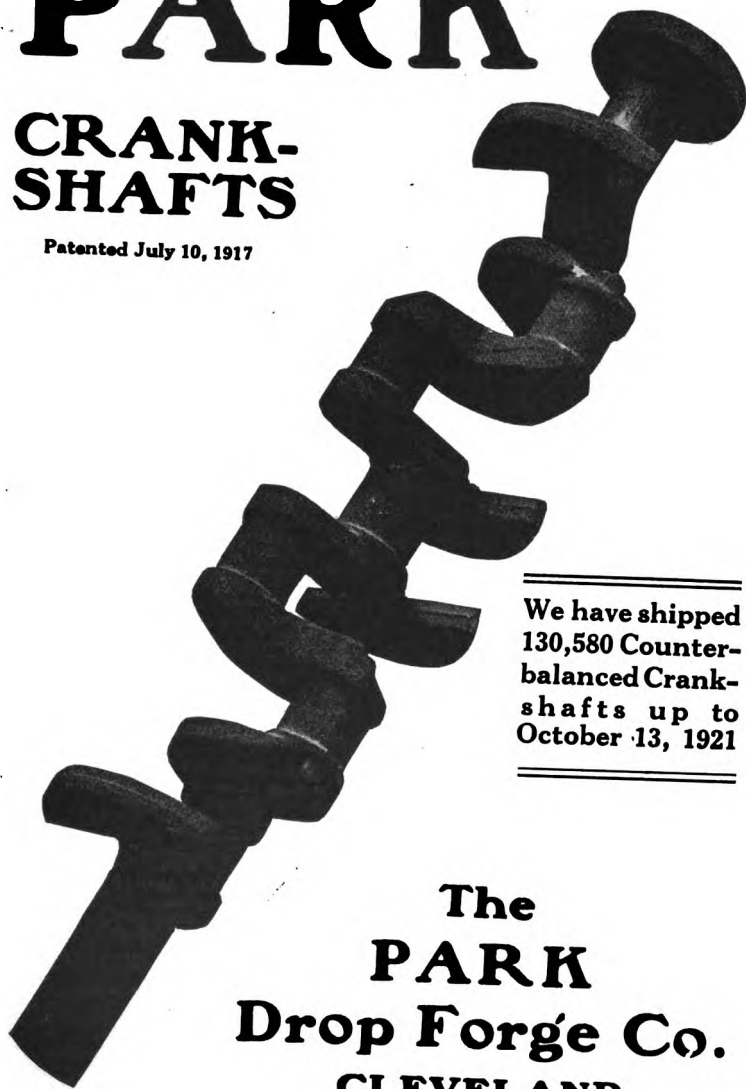
Continental Auto Parts Co., 2207 E. 17th
St., Columbus, Ind. (See page 661.)

Everything is listed under the NOUN or principal word

COUNTERBALANCED PARK

CRANK- SHAFTS

Patented July 10, 1917



We have shipped
130,580 Counter-
balanced Crank-
shafts up to
October 13, 1921

The
PARK
Drop Forge Co.
CLEVELAND

Please mention The Automobile Trade Directory

CREEPERS, Repair (Continued)

Duo—See Walker & Barkman Mfg. Co.
 E-Z—See Wagner Mfg. Co.
 Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawasco." (See page 429.)
 Fawasco—See Faw Co.
 Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Sturdy." (See page 537.)
 Foster Bros. Mfg. Co., Utica, N. Y. (See page 311.)
 French, F. A., Braddock Ave. & Guthrie St., Pittsburgh, Pa. "Getunder."
 Gem—See Moeschl-Edwards Corrugating Co.
 Getunder—See French, F. A.
 Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. "Sturdy" (See page 265.)
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Barcala Creepers.) (See page 179.)
 Ideal—See Lewis-Geer Mfg. Co.
 K & E—See Kund & Eiben Mfg. Co.
 Keystone Wire Matting Co., 607-09 Seventh St., Beaver Falls, Pa.
 Kund & Eiben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa. "K & E."
 Lewis-Geer Mfg. Co., 300 Railroad St., Ypsilanti, Mich. "Ideal."
 M. & P.—See Messenger & Parks Mfg. Co.
 Masco—See Milwaukee Auto Specialty Co.
 Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
 Messenger & Parks Mfg. Co., Aurora, Ill. "M. & P."
 Milwaukee Auto Specialty Mfg. Co., 705-18 Chestnut St., Milwaukee, Wis. "Masco."
 Moeschl-Edwards Corrugating Co., Eighth & Ninth Sts., Covington, Ky. "Gem."
 Pennsylvania Pressed Steel Corp., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankee."
 Portland Garage Co., 40-51 Cross St., Portland, Me.
 Springfield Wood Specialty Co., Springfield, N. Y.
 Sturdy—See Ferro Mfg. Co.
 Sturdy—See Gray Hofman.
 Super-Weld—See Welded Products Mfg. Co.
 W-A—See Whetstone & Co.
 Wagner Mfg. Co., Cedar Rapids, Ia. "E-Z."
 Walker & Barkman Mfg. Co., 408 Main St., Hartford, Conn. "Duo."
 Welded Products Mfg. Co., Milwaukee, Wis. "Super-Weld."
 Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."
 Wisconsin Welding & Cutting Co., 413 Sixth St., Milwaukee, Wis. (See page 821.)
 Yankee—See Pennsylvania Pressed Steel Corp.
 Zering Mfg. Co., H., 4437 Appleton St., Cincinnati, O.

CRIMPING MACHINES — See Machines, Crimping**CROWN FENDERS FOR FORDS—See Guards, Mud****CRUCIBLES, Metal Melting**

Bartley Crucible Co., Jonathan, Oxford St., Trenton, N. J.
 Bay State Crucible Co., Taunton, Mass.
 Dixon Crucible Co., Joseph, Jersey City, N. J.
 Gautier & Co., J. H., Green & Essex Sts., Jersey City, N. J.
 McCullough-Dalsell Crucible Co., Pittsburgh, Pa.
 Ross-Tacony Crucible Co. (Tacony), Philadelphia, Pa.
 Seidel, R. B., 1323-34 Callowhill St., Philadelphia, Pa.
 Taunton Crucible Co., Taunton, Mass.

Taylor, Robert J., 1900 Callowhill St., Philadelphia, Pa.

CUFF PROTECTORS—See Protectors, Sleeves**CUP CYLINDER LUBRICATORS — See Lubricators, Cup Cylinder****CUP GREASES—See Greases, Cup****CUP WRENCHES—See Wrenches, Grease Cup****CUPS, CHASSIS LUBRICATING—See Systems, Chassis Lubricating****CUPS AND CONES, Ball**

(See also Machine Work; also Screw Machine Products)

Ashley Machine Works, 724 University Ave., Rochester, N. Y.
 B-N—See Burgess-Norton Mfg. Co.
 Bossert Corp., Utica, N. Y.
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Burgess-Norton Mfg. Co., Dept. D, 532-44 Peyton St., Geneva, Ill. "B-N." (See page 627.)
 Crosby Co., Buffalo, N. Y. (See page 803.)
 Frauhum, Chas. N., 188 N. Colony St., Wallingford, Conn.
 Michigan Screw Co., 506 S. Hosmer St., Lansing, Mich.
 Onakes Co., Indianapolis, Ind. (See page 369.)
 Peninsular Products Co., Detroit, Mich. (See page 629.)
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Western Automatic Machine Screw Co., Elyria, O.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)
 Worcester Stamped Metal Co., Worcester, Mass. (See page 811.)

CUPS, CYLINDER LUBRICATING — See Lubricators, Cup Cylinder**CUPS, GREASE—See Cups, Oil and Grease****CUPS, Oil and Grease**

Airspring—See Hunter Pressed Steel Co.
 Ajax—See City Iron Works & Machine Co.
 Albany—See Cook's Sons.
 American Injector Co., 1469 14th Ave., Detroit, Mich. "Star." "Surlock."
 American Lubricator Co., Summit Ave. & Wabash Ry., Detroit, Mich.
 American Stamping Co., 81 Burchard St., Battle Creek, Mich. "Klicket."
 Ansonia Mfg. Co., Ansonia, Conn.
 Arrow—See Long Bros.
 Atlas—See Lunkenheimer Co.
 Autoware Corp., 441 State St., Detroit, Mich. "Dann."
 Bailey Co., W. J., 401 Mulberry St., Newark, N. J. "Climax."
 Bassick Co., Bridgeport, Conn. (See page 311.)
 Bay State Stamping Co., 330 Chandler St., Worcester, Mass. "Handy."
 Bloom Flusher Co.—See Monson, Chas. S.
 Bowen Products Corp., Auburn, N. Y. "Empress." (See page 313.)
 Bowen Products Corp., 2760 W. Warren Ave., Detroit, Mich.
 Bowen Products Corp., 983 17th Ave., S. E., Minneapolis, Minn. "Stahl."

Everything is listed under the NOUN or principal word

Foster Auto Repair Creeper

A creeper of more efficient use, of greater serviceability and offering unusual comfort to the repairman. Its capacity for making good lies in these exclusive features:

Metal Frame—Indestructible
Link Spring—Comfortable

Ball-Bearing Casters—Freely movable
Anchor—Positive locking device

Unlimited Service

List Price, \$5.00



Ask for the name of the Foster distributor in your territory

Foster Bros. Mfg. Co., Utica, N.Y.

Direct Representatives: Asch & Co.,
16-24 W. 61st St., New York, N. Y.
Jessop Thompson, 1421 S. Michigan
Ave., Chicago, Ill. McDonald &
Linforth, 739 Call Bldg., San Francisco, Cal.

GREASE AND OIL

≡ CUPS ≡

Automobile Hardware



THE BASSICK COMPANY

BRIDGEPORT, CONN.

The

Self-Aligning Grease Cup

You Cannot Cross the Threads
or
Lose the Tops

Self-Aligning



Self-Locking

Easy to Operate

Always in Working Order

Dawson Mfg. Company

2012 Larrabee Street
CHICAGO, ILL.

TRIPLE DIAMOND FILES

TWIST DRILLS, CARBON AND H. S.

Works:
Clearing, Ill.

Gen. Office:
Chicago, Ill.

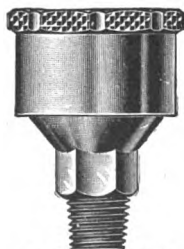


DROP FORGED WRENCHES

THE WHTAKER MANUFACTURING CO.

Works: Clearing, Ill.

General Office: Chicago, Ill.



GREASE CUPS

Please mention The Automobile Trade Directory

CUPS, Oil and Grease (Continued)

Camden—See Lindholm Metal Stamping Co.
 Carde Stamping & Tool Co., West Side, Saginaw, Mich.
 Cardinal—See Lunkenheimer Co.
 Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. "Oil-O-Matic."
 (See page 399.)
 Chicago—See Ohio Injector Co.
 City Iron Works & Machine Co., 520 S. Delaware Ave., Philadelphia, Pa. "Ajax," "Larg-Hex."
 Climax—See Bailey Co.
 Coe-Stapley Mfg. Corp., West Haven, Conn. "Lubrick." (See page 487.)
 Cook's Sons, Adam, 708-10 Washington St., New York, N. Y. "Albany."
 Dann—See Autoware Corp.
 Dawson Mfg. Co., 2012 Larrabee St., Chicago, Ill. (See page 311.)
 Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.
 Edelmunn & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Empress—See Bowen Products Corp.
 Essex Brass Corp., 2000 Franklin St., Detroit, Mich.
 Evans—See Merchant & Evans Co.
 Felix Mfg. Co., 4439 N. Clark St., Chicago, Ill.
 Forc—See Holland Machine Co.
 Garrison Co., 215 River St., Bridgeport, Conn. "Bridgeport."
 Gem—See Lunkenheimer Co.
 Glits Bros. Mfg. Co., 1940 Kilbourne Ave., Chicago, Ill.
 Greer, Frederic, 2437 Michigan Ave., Chicago, Ill.
 Greist Mfg. Co., New Haven, Conn. "Noreca." (See page 559.)
 Handy—See Bay State Stamping Co.
 Holland Machine Co., 132 Water St., So. Norwalk, Conn. "Forc."
 Hunter Pressed Steel Co., Pierce & Linden Sts., Lansdale, Pa. "Airspring."
 Ideal—See Lunkenheimer Co.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Jewel—See Lunkenheimer Co.
 Justrite Mfg. Co., 1061-81 Southport Ave., Chicago, Ill.
 K. M. Mfg. Co., Factorles Bldg., Toledo, O.
 Larg-Hex—See City Iron Works & Machine Co.
 Lindholm Metal Stamping Co., 107-15 Erie St., Camden, N. J. "Vale," "Camden," "Madeira," "McKee," "Simplex," "Reno."
 Lion—See Lunkenheimer Co.
 Little Wonder—See Tioga Mfg. Co.
 Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Arrow."
 Lubrik—See Coe-Stapley Mfg. Co.
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Ideal," "Lion," "Pioneer," "Royal," "Sentinel," "Tiger," "Gem," "Cardinal," "Mite," "Majestic," "Jewel," "Owl," "Atlas," "Reliance," "Primo," "Wingo," "Securo," "Surety."
 M & E—See Merchant & Evans Co.
 McKee—See Lindholm Metal Stamping Co.
 McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
 Madeira—See Lindholm Metal Stamping Co.
 Madison-Kipp Co., 2227 Waubesa St., Madison, Wis.
 Majestic—See Lunkenheimer Co.
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa., "M. & E.," "Evans."

Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
 Milwaukee Valve Co., 139 Burrell St., Milwaukee, Wis.
 Mite—See Lunkenheimer Co.
 Monitor Lubricating Co., 1218 Chestnut St., Philadelphia, Pa.
 Monson, Chas. S., Dime Bank Bldg., Detroit, Mich. (Sole Distributor for Bloom Flusher Co., Tiffin, O. "Tip Top.")
 National Brass Mfg. Co., 191-93 Mill St., Rochester, N. Y.
 Newcup—See Newton Mfg. Co.
 Newton Mfg. Co., Plainville, Conn. "Newcup." (See page 315.)
 Noreca—See Greist Mfg. Co.
 Ohio Injector Co., Wadsworth, O. "Chicago."
 Oil-O-Matic—See Champion Mfg. Co.
 O. K. Mfg. Co., 40 Potomac St., Dayton, O.
 Owl—See Lunkenheimer Co.
 Penberthy Injector Co., Detroit, Mich. "Siren," "Samson," "Senator," "Saturn." (See page 407.)
 Penn Pressed Metal Co., Newton Ave. & Line St., Camden, N. J. "Simplex."
 Pioneer—See Lunkenheimer Co.
 Powell Co., Wm., 2535 Spring Grove Ave., Cincinnati, O.
 Precision Metal Workers, 3100-12 Carroll Ave., Chicago, Ill.
 Primo—See Lunkenheimer Co.
 Reliance—See Lunkenheimer Co.
 Reno—See Lindholm Metal Stamping Co.
 Rich Mfg. Co., 370 Atlantic Ave., Boston, Mass.
 Richardson-Phenix Co., 122-28 Reservoir Ave., Milwaukee, Wis.
 Royal—See Lunkenheimer Co.
 Samson—See Penberthy Injector Co.
 Saturn—See Penberthy Injector Co.
 Securo—See Lunkenheimer Co.
 Senator—See Penberthy Injector Co.
 Sentinel—See Lunkenheimer Co.
 Simplex—See Lindholm Metal Stamping Co.
 Simplex—See Penn Pressed Metal Co.
 Siren—See Penberthy Injector Co.
 Stahl—See Bowen Products Corp.
 Star—See American Injector Co.
 Surety—See Lunkenheimer Co.
 Surlock—See American Injector Co.
 Tiger—See Lunkenheimer Co.
 Tioga Mfg. Co., 3309 N. 12th St., Philadelphia, Pa. "Little Wonder."
 Tip Top—See Monson, Chas. S.
 Tucker, W. H. & C. F., Hartford, Conn. (See page 317.)
 Vale—See Lindholm Metal Stamping Co.
 Vibra Engineering Co., 250 Atlantic Ave., Camden, N. J.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Whittaker Mfg. Co., Chicago, Ill. (See page 311.)
 Wilkinson Co., Wm. H., Main St., West Medway, Mass.
 Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.
 Wingo—See Lunkenheimer Co.

CUPS, Oil and Grease, for Fords

Albany—See Cook's Sons.
 Bowen Products Corp., Auburn, N. Y. "Empress." (See page 313.)
 Cook's Sons, Adam, 708-10 Washington St., New York, N. Y. "Albany."

Everything is listed under the NOUN or principal word

Empress Grease and Oil Cups

As Standard Factory Equipment Dominate the
Motor Car, Motor Truck and Tractor Industries



Empress No. 53

**Style N
Oil Cups**

Made from Brass and
Steel

Dimensions, Threads, etc.



No.	Stock Thread	Optional Thread	Dia. of Cap
1	1/4"-32V		3/8"
2	1/2"-32V		1 1/8"
3	3/4"-24V	1/2"	1 1/2"
4	1"-24V	3/4"	1 3/4"



Empress No. 116

**Hinge Lid Elbow
Oil Cups**

Made from Steel

Dimensions, Threads, etc.



Number		4	5	6
Outside Diameter of Body.....	in.	1/2"	3/4"	1"
Regular Pipe Thread.....	in.	1/2"	3/4"	1"



Empress No. 200

**Plain Compression
Grease Cups**

Made from Brass and
Steel

Dimensions, Threads, etc.



Number		000	00	0	1	2	3
Inside Diam.	in.	3/8"	1	1 1/4	1 1/2	2	2 1/2
Reg. Pipe Th'd	in.	3/8"	1	1 1/4	1 1/2	2	2 1/2
Cap. (Grease)	oz.	1/2	1	1 1/2	2	3	4
Opt. Thread.	in.	1/4"-32	1/2"-28	3/4"-24	1"-20	1 1/4"-18	1 1/2"-16



Empress No. 207

**Leather Packed
Grease Cups**

Made from Brass and
Steel

Dimensions, Threads, etc.



Number		000	00	0	1	2
Inside Diameter.....	in.	3/4"	1	1 1/4	1 1/2	2
Reg. Pipe Thread.....	in.	3/4"	1	1 1/4	1 1/2	2
Cap. (Grease).....	oz.	1/2	1	1 1/2	2	3
Optional Thread.....	in.	1/2"-32	3/4"-28	1"-24	1 1/4"-20	1 1/2"-18



Empress No. 5739

**Reservoir Type
Oil Cups**

Made from Steel

Dimensions, Threads, etc.



Number		000	00
Height over all.....	in.	2	2 1/2
Diameter of Cap.....	in.	1	1 1/2
Diameter of Hex.....	in.	1 1/2	2
Regular Pipe Thread.....	in.	1 1/2"	2"



Empress No. 249

**Ratchet
Grease Cups**

Made from Brass and
Steel

Dimensions, Threads, etc.



Number		000	00	0	1	2
Inside Diameter.....	in.	3/4"	1	1 1/4	1 1/2	2
Reg. Pipe Thread.....	in.	3/4"	1	1 1/4	1 1/2	2
Capacity (Grease).....	oz.	1/2	1	1 1/2	2	3
Opt. Pipe Thread.....	in.	1/2"-32	3/4"-28	1"-24	1 1/4"-20	1 1/2"-18
Opt. Fem. Thread.....	in.	1/2"	3/4"	1"	1 1/4"	1 1/2"

Prices Upon Application

Bowen Products Corporation

Manufacturing and Sales Divisions

AUBURN DIVISION, AUBURN, N. Y.

WINKLEY DIVISION, DETROIT, MICH.

CLEVELAND DIVISION, CLEVELAND, OHIO

MINNEAPOLIS DIVISION, MINNEAPOLIS, MINN.

General Catalog P Shows
Over Fifty Other Styles



Branch Sales Offices

NEW YORK, 220 BROADWAY

CHICAGO, 1607 OTIS BUILDING

BOSTON, 903 DEXTER BUILDING

CINCINNATI, 409 LYRIC BUILDING

SAN FRANCISCO, MONADNOCK BUILDING

Write Today for
Catalog P

Please mention The Automobile Trade Directory

CUPS, Oil and Grease, for Fords (Continued)

Cincinnati Screw Co., Twightree, O.
(See page 735.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)

Empress—See Bowen Products Corp.

Evans—See Merchant & Evans Co.

Felix Mfg. Co., 4439 N. Clark St., Chicago, Ill.

Forc—See Holland Machine Co.

Freeman Brass Works, 92 Bowery, New York, N. Y.

Garrison Co., 215 River St., Bridgeport, Conn.

Holland Machine Co., 132 Water St., So. Norwalk, Conn. "Forc."

M. & E.—See Merchant & Evans Co.

Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M. & E." "Evans."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Tucker, W. H. & C. F., Hartford, Conn.
(See page 317.)

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

CUPS, ORDINARY PRIMING—See Cocks, Standard Pet

CUPS, Spring Key and Special Priming

(For ordinary priming cups—See Cocks, Standard Pet)

Acme Brass Works, 8211 Collins Ave., Detroit, Mich.

Amalgamated Brass Co., Blanchester, O.

American Brass & Iron Co., Detroit, Mich.
(See page 203.)

American Injector Co., 1469 14th Ave., Detroit, Mich.

American Lubricator Co., Summit Ave. & Wabash Ry., Detroit, Mich.

Becco—See Michigan Motor Specialties Co.

Brass Products Co., 3661-73 Palmer Ave., E., Detroit, Mich.

Brown-McLaren Mfg. Co., 5853-81 W. Fort St., Detroit, Mich.

Buckeye Iron & Brass Works, 324 E. Third St., Dayton, O.

Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.

Detroit Brass & Malleable Works, 1177 Holden Ave., Detroit, Mich.

Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.

Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)

Grelst Mfg. Co., New Haven, Conn.
(See page 559.)

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Hepburn—See Victor Brass Mfg. Co.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Kant-Klog—See Taylor Machine Co.

King, W. C., Ryder St. & Montgomery Ave., Litchfield, Ill.

Lincoln Brass Works, Detroit, Mich.
(See page 263.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.

Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

Morgan Mfg. Co., Court St., Keene, N. H.
(See page 875.)

National Brass Mfg. Co., 191-98 Mill St., Rochester, N. Y.

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.

Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.

Standard Brass Works, 2931 Wight St., Detroit, Mich.

Sterling & Skinner Mfg. Co., 2673 E. Grand Blvd., Detroit, Mich.

Taylor Machine Co., 7804 Carnegie Ave., Cleveland, O. "Kant-Klog."

Victor Brass Mfg. Co., 6813 Wade Park Ave., Cleveland, O. "Hepburn."

CUPS AND COVERS, Spring Leaf Lubricating

(Oil cups or boxes, felt rollers or lubricant retaining covers to be applied to springs to keep them lubricated and so eliminate squeaks; for Spring Lubricating Strips—See Strips, Spring Leaf Lubricating; for Spring Leaf Separating Tools—See Tools, Spring Leaf Separating.)

Anderson Spring Lubricator Co., 42 Lansdowne St., Boston, Mass. (See page 315.)

Babbitt Spring Oiler Co., 11223 Superior Ave., Cleveland, O.

Bailey Co., W. J., 401 Mulberry St., Newark, N. J.

Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, O. "Rello."

Buxton & Owen, 30 N. La Salle St., Chicago, Ill. "Dilso."

Dilso—See Buxton & Owen.

Dunn Mfg. Co., A. C., 1118-26 Third Ave., S., Minneapolis, Minn. "Sure-On."

Federal Co.—See Van Spring Oiler Co.

Federal Stamping Co., Holland, Mich.

G. L. W. Spring Oiler Co., Savoy Theater Bldg., San Diego, Cal.

Grus Leaf Spring Oiler Co., 4504 W. Harrison St., Chicago, Ill.

Hastings Mfg. Co., 36 E. Mill St., Hastings, Mich. (See page 521.)

Hopewell Bros., Watertown, Mass.
(See page 965.)

Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 405.)

Jeavons Spring Lubricator, 1607 Prospect Ave., Cleveland, O. (See page 315.)

Lazarus Mfg. Co., 224 High St., Cleveland, O.

Madison-Kipp Corp., 2227 Waubesa St., Madison, Wis.

Reliable Spring Oiler Co., 446 Miller Ave., Columbus, O.

Rello—See Brown Spring Oiler Co.

Renfro, John F., 1834 Broadway, New York, N. Y.

Sterling Mfg. Co., 2845-53 Prospect Ave., Cleveland, O.

Sure-On—See Dunn Mfg. Co.

Van Spring Oiler Co., 222 N. Wabash Ave., Chicago, Ill. (Sole Distributors for Federal Co., South Haven, Mich.)

Woodworth Mfg. Co., 1-29 Starr Ave., Birmingham, N. Y.

Wright Cover Mfg. Co., 1413 S. Michigan Ave., Chicago, Ill.

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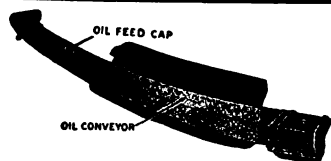
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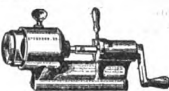
nished as required. For equipment or replacement. Furnish plain or with wick feed.

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(Oil cups or bases, felt covers or lubricant retaining covers to be applied to springs to keep them lubricated and so eliminate squeaks)

- Bowen Products Corp., Auburn, N. Y.
(See page 313.)
Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, O. "Relio."
Grus Leaf Spring Oiler Co., 4504 W. Harrison St., Chicago, Ill.
Hirst, F. G., 12th & Wallace Sts., Philadelphia, Pa.
Jeavons Spring Lubricator, 1607 Prospect Ave., Cleveland, O. (See page 315.)
Mobile Mfg. Co., 820-22 S. Tripp Ave., Chicago, Ill.
Rello—See Brown Spring Oiler Co.
Retco—See Tupper & Co.
Tupper & Co., R. E., Sandwich, Mass. "Retco."

CURB BOXES—See Boxes, Standard and Curb

CURING BAGS—See Bags, Steam Tire Curing

CURLED HAIR—See Hair, Upholstery

CURRENT RECTIFIERS—See Rectifiers, Alternating Current

CURTAIN CASES FOR FORDS—See Cases, Curtain

CURTAIN CLIPS—See Clips, Curtain

CURTAIN FASTENERS—See Fasteners, Curtain

CURTAIN LIGHTS—See Lights, Curtain; also Windows, Glass Curtain

CURTAIN OPENERS—See Openers, Curtain

CURTAIN OPENING FITTINGS—See Openers, Curtain

CURTAIN ROLLERS—See Rollers, Curtain

CURTAIN WINDOWS—See Lights, Curtain; also Windows, Glass Curtain

CURTAINS, Closed Car, for Fords

- Curtain Supply Co., 350 W. Ontario St., Chicago, Ill. "Rexford."
Rexford—See Curtain Supply Co.

CURTAINS, Special Top

(For ordinary curtains—See Tops, Automobile)

- Bowman Gould Co., 4446 Woodward Ave., Detroit, Mich. "Wink."
Brackhill Co., E. F., 1953 Laveer St., Philadelphia, Pa.
H & B—See Holmes & Bostrom Bros.
Holmes & Bostrom Bros., 365-67 17th Ave., Milwaukee, Wis. "H. & B."
Jiffy Auto Curtain Co., 404-06 E. Jefferson Ave., Detroit, Mich.
Laroche, J. P., 5913-20 S. Ashland Ave., Chicago, Ill.
Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal.
Wink—See Bowman Gould Co.

CURTAINS, Special Top, for Fords

(For ordinary curtains—See Tops, Special)

- Cleveland Top & Specialty Co., Carnegie & E. 65th Sts., Cleveland, O.
Copp Co., George W., 518 W. 55th St., New York, N. Y. (See page 123.)
Dafco-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Ustus."
H & B—See Holmes & Bostrom Bros.
Holmes & Bostrom Bros., 365-67 17th Ave., Milwaukee, Wis. "H. & B."
Liberty Top & Tire Co., 128 E. Eighth St., Cincinnati, O.
R-E—See Roose Mfg. Co.
Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E."
Storm King Mfg. Co., Winneconne, Wis. (See page 317.)
Ustus—See Dafco-Eustice Co.

CUSHIONS, BACK REST—See Rests, Cushion

CUSHIONS, Special Seat

(For ordinary cushions—See Bodies; also Tops)

- Brackhill, Chas., 3419 N. Broad St., Philadelphia, Pa.
Busse & Co., W. A., 2700 W. Lake St., Chicago, Ill.
Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.
Interlocked Spring Seat Corp., 4801-19 S. Maplewood Ave., Chicago, Ill.
Kant Sag—See Modern Upholstery Co.
Laroche, J. P., 5913-20 S. Ashland Ave., Chicago, Ill.
Modern Upholstery Co., 926-28 St. Aubin Ave., Detroit, Mich. "Kant Sag."
Orno—See Peerless Spring Co.
Peerless Spring Co., 2525 W. Taylor St., Chicago, Ill. "Orno."
Perfection—See Pneumatic Mfg. Co.
Pneumatic Mfg. Co., 124-28 Atlantic Ave., Brooklyn, N. Y. "Perfection."
Red Diamond—See Reynolds Spring Co.
Reynolds Spring Co., Jackson, Mich. "Red Diamond." (See page 799.)
Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.

CUSHIONS, Special Seat for Fords

- Aero—See Detroit Spring Co.
All-Wanta—See Fort Pitt Bedding Co.
American Cushion & Spring Co., Kalamazoo, Mich.
Detroit Spring Co., 406 W. Jefferson Ave., Detroit, Mich. "Aero."
Fort Pitt Bedding Co., N. S., Pittsburgh, Pa. "All-Wanta." (See page 801.)
Interlocked Spring Seat Corp., 4801-19 S. Maplewood Ave., Chicago, Ill.
Kant Sag—See Modern Upholstering Co.
Modern Upholstering Co., 926-28 St. Aubin Ave., Detroit, Mich. "Kant Sag."
Orno—See Peerless Spring Co.
Peerless Spring Co., 2525 W. Taylor St., Chicago, Ill. "Orno."
Tower & Co., Cohasset, Mass.
Ustus Products Co., 4042 W. Jefferson St., Detroit, Mich.

CUTOUT PEDALS—See Pedals, Horn

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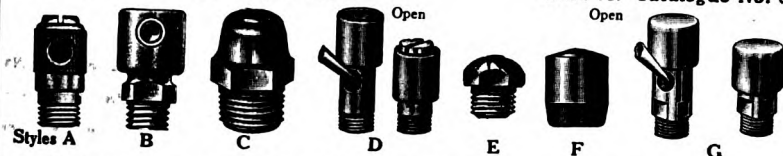
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CUTOOTS, Automatic Ignition, for Fords

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Ewing & Ewing, Jeromeville, O.

CUTOOTS, MUFFLER—See Valves, Muffler Cut-Out; also Pedals, Horn and Cut-Out

CUTOOTS, Reverse Current

(For automatically connecting the generator to the battery when the voltage is high enough to charge the battery and disconnecting it when the voltage is too low)

Basco—See Briggs & Stratton Co.

Briggs & Stratton Co., Milwaukee, Wis. "Basco." (See page 343.)

New York Coll Co., 338-40 Pearl St., New York, N. Y.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)

CUTTER GRINDERS—See Grinders, Reamer

CUTTERS, BAR—See Cutters, Rod and Bar

CUTTERS, Brake Lining

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Distributors.) (See pages 569 to 574.)

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Simonsen Iron Works, Sioux Rapids, Ia. (See page 573.)

CUTTERS, Circular Glass

(For cutting lamp or instrument glasses)

Goodell-Pratt Co., Greenfield, Mass.

Millers Falls Co., Millers Falls, Mass. "Star."

Red Devil—See Smith & Hemenway.

Shawyer Co., rear 21 W. Pleasant St., Springfield, O.

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

Star—See Millers Falls Co.

CUTTERS, GASKET—See Cutters, Washer and Gasket

CUTTERS, GLASS—See Cutters, Circular Glass

CUTTERS, LINING—See Cutters, Brake Lining

CUTTERS, Milling

Advance Machinery Co., Van Wert, O.

American Machine Products Co., 18th & Howard Sts., Detroit, Mich. "Ampeco."

Ampeco—See American Machine Products Co.

Barber-Colman Co., Rockford, Ill.

Becker Milling Machine Co., 53 Franklin St., Boston, Mass.

Blanke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blanke Twist Drill & Tool Co., Taunton, Mass.)

Blanke Twist Drill & Tool Co.—See Blanke Co.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Cleveland Twist Drill Co., Cleveland, O. (See page 367.)

Clough, R. M., 327 Colony St., Tolland, Conn.

Cowles Tool Co., 2086-96 W. 110th St., Cleveland, O.

Curvex—See Pratt & Whitney Co.

Davidson Tool Mfg. Co., 118-22 Malden Lane, New York, N. Y.

Detroit Reamer & Tool Co., 1326 E. Congress St., Detroit, Mich.

Detroit Twist Drill Co., Detroit, Mich. (See page 351.)

Fastfeed Drill & Tool Corp., Clinton & Oakwood Sts., Toledo, O.

Goddard & Goddard Co., 4724 Hastings St., W., Detroit, Mich.

Haynes Stellite Co., 30 E. 42nd St., New York, N. Y. "Stellite."

Hergl Mfg. Co., Bridgeport, Conn.

Holmes Special Tool Co., 33 Canal St., New Haven, Conn.

Illinois Tool Works, 154 E. Erie St., Chicago, Ill.

Ingersoll Milling Machine Co., Douglas & Willoughby Sts., Rockford, Ill.

Keystone Reamer & Tool Co., Millersburg, Pa. (See page 693.)

Lincoln Twist Drill Co., Arlington St., Taunton, Mass.

McCarthy Drill & Tool Corp., 30 Church St., New York, N. Y.

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

National Tool Co., W. 113th St. & Madison Ave., Cleveland, O.

National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.

New Britain Tool & Mfg. Co., 5 Harvard St., New Britain, Conn.

Parker Machine Co., 221 High St., Boston, Mass.

Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.

Pittsburgh Saw & Mfg. Co., 326 & Smallman Sts., Pittsburgh, Pa.

Polk & Son Co., A. J., Millersburg, Pa.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. "Curvex."

Production Tool Co. of America, Le Grande & Foster Aves., Detroit, Mich.

Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.

Scott-Spencer Automatic Tool Co., 2682 Madison Rd., Cincinnati, O.

Standard Tool Co., 6900-34 Central Ave., Cleveland, O.

Stellite—See Haynes Stellite Co.

Tabor Mfg. Co., 1740 Hamilton St., Philadelphia, Pa. "Taylor-Newbold."

Taylor-Newbold—See Tabor Mfg. Co.

Thurston Mfg. Co., 140 Benedict St., Providence, R. I.

Union Twist Drill Co., Chestnut Hill Ave., Athol, Mass.

Watervliet Tool Co., 1031-41 Broadway, Albany, N. Y.

Whitney Mfg. Co., Hartford, Conn. (See page 227.)

CUTTERS, PISTON RING GROVE CARBON—See Tools, Piston Ring Grove Cleaning

Everything is listed under the NOUN or principal word

CUTTERS, Rod and Bar*(Hand Power)*

- Armstrong-Blum Mfg. Co., 333 N. Francisco Ave., Chicago, Ill. "Marvel."
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Burgess Machine Co., 45 Chestnut St., New Haven, Conn.
 Hercules—See Tucker, W. H. & C. F.
 Marvel—See Armstrong-Blum Mfg. Co.
 Merwin Mfg. Co., 310-20 E. 19th St., Erie, Pa. "Vulcan."
 Tucker, W. H. & C. F., Hartford, Conn. "Hercules." (See page 317.)
 Vulcan—See Merwin Mfg. Co.
 Wallace Supplies Mfg. Co., 420 Orleans St., Chicago, Ill.

CUTTERS, ROTARY—See Saws and Cutters, Rotary

CUTTERS, Washer or Gasket

- Bonney Forge & Tool Works, Allentown, Pa. "Cooper."
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Cooper—See Bonney Forge & Tool Works.
 Goodell-Pratt Co., Greenfield, Mass.
 Hartson, C. E., 120 Congress Ave., Rochester, N. Y.
 Hoggson & Pettis Mfg. Co., 141 Brewery St., New Haven, Conn.
 Krauter & Co., Newark, N. J. (See page 643.)
 Wound Tool Co., Dept. D, Seventh & Hickory Sts., St. Louis, Mo. (See page 887.)
 Rose Mfg. Co., J. A., 105 S. Kansas Ave., Hastings, Neb.
 Smith, Otis A., Rockfall, Conn.
 Storts & Son, John, 210-12 Vine St., Philadelphia, Pa.
 Wilder Mfg. Co., 1819 N. 17th St., St. Louis, Mo. (See page 411.)

CUTTING COMPOUNDS—See Lubricants, Cutting

CUTTING DIES—See Taps and Dies

CUTTING LUBRICANTS—See Lubricants, Cutting

CUTTING OILS—See Lubricants, Cutting

CUTTING STEEL—See Steel, Self-Hardening Cutting

CYANIDE HARDENING—See Treating, Heat

CYLINDER BOLTS FOR FORDS—See Bolts, Special

CYLINDER BORING MACHINES—See Machines, Boring

CYLINDER CASTINGS—See Castings, Gray Iron

CYLINDER CLEANING COMPOUNDS—See Compounds, Carbon Removing

CYLINDER CLEANING MACHINES—See Machines, Engine Decarbonizing

CYLINDER GAGES—See Gages, Cylinder

CYLINDER GRINDERS—See Grinders, Cylinder

CYLINDER GRINDING ATTACHMENTS—See Attachments, Lathe Cylinder Grinding

CYLINDER HEAD GASKETS FOR FORDS—See Gaskets, Cylinder Head

CYLINDER HEADS FOR FORDS—See Heads, Special Cylinder

CYLINDER JIGS FOR FORDS—See Reamers and Jigs, Cylinder

CYLINDER LAPPING TOOLS—See Tools, Cylinder Lapping

CYLINDER LUBRICATING CUPS—See Lubricators, Cup Cylinder

CYLINDER LUBRICATORS—See Lubricators, Cup Cylinder

CYLINDER OILS—See Oils

CYLINDER REAMERS FOR FORDS—See Reamers and Jigs, Cylinder

CYLINDER REBORING MACHINES—See Machines, Cylinder Reboring; for Cylinder Reboring Tools—See Tools, Portable Cylinder Reboring

CYLINDER REBORING TOOLS—See Tools, Portable Cylinder Reboring

CYLINDER REBORING TOOLS FOR FORDS—See Tools, Cylinder Reboring

CYLINDERS, Finished or Machined

(For cylinder castings in the rough—See Castings, Gray Iron)

- Detroit Foundry Co., 2642 E. Grand Blvd., Detroit, Mich.
 Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.
 Fulton Foundry & Machine Co., 26 Furman St., Brooklyn, N. Y.
 Stroh Casting Co., 232 Chene St., Detroit, Mich.
 Wainwright Engineering Corp., Connersville, Ind. (See page 632.)

CYLINDERS, Regrinding of

(See also Welding, Autogenous; also Machine Work)

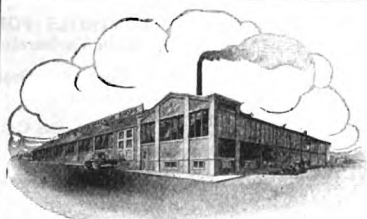
- Acme Mfg. Works, 660 Turk St., San Francisco, Cal.
 Adapt Machinery Co., 1624-32 S. Wabash Ave., Chicago, Ill.
 American Engine & Airplane Co., 2869 W. Pico St., Los Angeles, Cal. (See page 635.)
 Anderson, H. S., 211-19 N. Sheridan Ave., Pittsburgh, Pa.
 Arizona Machinery Mfg. Co., 222-26 N. Seventh Ave., Phoenix, Ariz.
 Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.
 Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.

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CYLINDERS, Regrinding of (Continued)

- Blass Automotive Engineering Co., Ralph, 975-85 Geary St., San Francisco, Cal.
- Blettner, Geo. H., 1401-06 Jackson Blvd., Chicago, Ill.
- Bracken Cylinder Regrinding Co., Harry L., 150 Social Hall Ave., Salt Lake City, Utah.
- Bridgeport Piston Ring Co., Connecticut Ave. & Third St., Bridgeport, Conn.
- Bu-Nite—See Butler Mfg. Co.
- Buffalo Cylinder Grinding Co., 889 Main St., Buffalo, N. Y.
- Burt Motor Car Co., W. J., Pico & Hope Sts., Los Angeles, Cal.
- Butler Mfg. Co., 3224 W. Washington St., Indianapolis, Ind. "Bu-Nite."
- C. & E. Motor Co., Indiana, Pa.
- Catelain, Andre, 1446-48 Indiana Ave., Chicago, Ill.
- Charter Oak Machine Co., 438 Asylum St., Hartford, Conn. (See page 321.)
- Clarke-Sinclair Machine Works, 731 Turk St., San Francisco, Cal.
- Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.
- Cook Auto Machine Co., J. B., 247 Poplar Ave., Memphis, Tenn.
- Demster, W. R., 1816-18 Oak St., Kansas City, Mo.
- Diebel, A. J., 976 Woodward Ave., Detroit, Mich.
- Doerr Motor Works, Louis J., 18th & Allen Sts., St. Louis, Mo.
- Du Bois Machine Shop, 118-28 Hudson Ave., Albany, N. Y.
- Durham Co., P. J., 244 W. 49th St., New York, N. Y.
- Dyer Co., 155 Brookline St., Cambridge, Mass.
- Edwards Motor Co., 311-15 S. 12th St., Minneapolis, Minn.
- Esge, E. N., 1326 S. Main St., Los Angeles, Cal.
- Emerson Mfg. Co., 3529 Gratiot Ave., Detroit, Mich.
- Everts Machine Co., 33 Francis Ave., Hartford, Conn.
- Fargo Motor Co., 1162-64 W. 22d St., Chicago, Ill. (See page 629.)
- Fox—See Sunderland Machine Shops.
- Frostholm Bros., 221 Washington Sq., Syracuse, N. Y.
- Frostholm-Treiber, Inc., 222 W. Water St., Rochester, N. Y.
- Gabel Bros., 35 Third St., Fond du Lac, Wis.
- Goodin Motor Service Corp., 333 S. Lawrence St., Wichita, Kans.
- Grand Tool & Machine Works, 161 Grand St., New York, N. Y.
- Green Engineering Co., Main St. & Burns Ave., Dayton, O.
- H. & H. Machine Co., 4274 Easton Ave., St. Louis, Mo.
- Hanke Iron & Wire Works, Albany, Grand & Chicago Aves., Chicago, Ill.
- Hawkeye Truck Co., Sioux City, Ia.
- Heine Machine Works, 4160 Minnehaha Ave., Minneapolis, Minn.
- Hercules Welding & Machine Co., 223-25 N. 16th St., Philadelphia, Pa.
- Hinckley Cylinder Grinding Co., 172 Middle Ave., Aurora, Ill.
- Hingley, J. A., 1816-18 Blake St., Denver, Colo.
- Houper Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 633.)
- Jahn Grinding Works, 709 W. Second St., Davenport, Iowa.
- Jahns, W. H., 2663 Lacy St., Los Angeles, Cal.
- Kemp Machine Works, 1215 S. Franklin St., Muncie, Ind.
- Keuka Industries, Inc., Hammondsport, N. Y.
- Kinslow Machine Works, H. M., 413-15 W. Fifth St., Santa Ana, Cal.
- Kreiter Machine Co., 205 San Jacinto, Houston, Tex.
- Lake Sales Co., 1947 Broadway, New York, N. Y.
- Lammert & Mann Co., 215-221 N. Wood St., Chicago, Ill.
- Leading Machinery & Supply Co., 217-21 Seventh St., Milwaukee, Wis.
- Litter's Motor Machine Shop, 240 N. Fourth St., Columbus, O.
- Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
- McCadden Machine Works, 502-12 Fourth St., N. St. Cloud, Minn.
- Merritt Co., S. Whyte, 516 Fifth Ave., New York, N. Y.
- Midland Machine Works, 221-25 S. Third St., Muskogee, Okla.
- Milwaukee Cylinder Grinding Co., Wiel & Concordia Aves., Milwaukee, Wis.
- Modern Auto Repair Co., 4605 Olive St., St. Louis, Mo.
- Modern Electric & Machine Co., 936-40 Fort Wayne Ave., Indianapolis, Ind.
- Modern Tool Die Machine Co., 214-26 N. Fourth St., Columbus, O.
- Motor Parts Machine Co., 818 Walnut St., Cincinnati, O.
- Motor Products & Engineering Co., 1917 E. 61st St., Cleveland, O.
- National Welding & Mfg. Co., 1419-20 Niagara St., Buffalo, N. Y.
- Neupert Mfg. Co., 82 Lark St., Buffalo, N. Y.
- Nilson-Miller Co., 50 13th St., Hoboken, N. J. (See page 719.)
- Noonan Mfg. Co., D. R., 219-21 W. Court St., Paris, Ill.
- Odom Bros. Co., E. H., 19 James St., Atlanta, Ga.
- Park Machine Co., 176 W. Third St., St. Paul, Minn.
- Patch Co., E. A., 17 Ipswich St., Boston, Mass.
- Peterson Machine Co., 34 E. 29th St., Brooklyn, N. Y.
- Pondelick Bros., 215 S. Leavitt St., Chicago, Ill.
- Precision Machine Co., Riggs Bldg., Washington, D. C.
- Rabaus & Toeller, Cedar Rapids, Ia.
- Ryser Machine Works, 931-35 E. 43d St., Chicago, Ill.
- St. Paul Auto Cylinder Grinding Co., 1152 Rice St., St. Paul, Minn.
- Salter Motor Mfg. Co., 1516-18 Oakland Ave., Kansas City, Mo.
- Salzer Tool Works, 328 Washington Ave., Newark, N. J.
- Saucke Bros., 47 Franklin St., Rochester, N. Y.
- Schmidt Co., B. L., 417 W. Fourth St., Davenport, Ia.
- Schneer Co., J. J., 799 Golden Gate Ave., San Francisco, Cal. (See page 429.)
- Sherman, Alfred E., 99 Friendship St., Providence, R. I.
- Sloat, E. R., 5930 Woodward Ave., Detroit, Mich.
- Smith-Hamburg-Scott Welding Co., 505 W. 57th St., New York, N. Y.
- Sprigg, Z. T., 1942 Arapahoe St., Denver, Colo.

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CYLINDERS, Regrinding of (Continued)

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 Standard Welding & Machine Co., 416 E. Second St., Des Moines, Iowa.
 Sterling Engine Co., 333 S. Clinton St., Chicago, Ill.
 Stewart Machine Works, Liberty & Greene Sts., Waynesburg, Pa.
 Sunderland Machine Shops, Omaha, Neb. "Fox." (See page 321.)
 Sure Pressure Acetylene Generator Co., 1010-12 W. Main St., Oklahoma City, Okla.
 Swan, H. O. Mattoon, Ill.
 Taylor Mfg. Co., 10 Portland St., Cambridge, Mass.
 Tranter Mfg. Co., 105 Water St., Pittsburgh, Pa. (See page 323.)
 Triangle Machining Co., Peoria, Ill.
 Trindl Co., Wabash Ave. & 20th St., Chicago, Ill. (See page 637.)
 Vulcan Brazing & Machine Co., 2126-30 Race St., Philadelphia, Pa. (See page 637.)
 Wadell Motor Corp., 661-71 Freylinhuysen Ave., Newark, N. J.
 Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 321.)
 Weems, M. K., Maine & 11th Sts., Quincy, Ill.
 Western Fixture Co., 573-75 E. Water St., Milwaukee, Wis.
 Westervelt Machine Corp., Lawrence, N. Y. (See page 632.)
 Whitaker Sales Co., Shelbyville, Ill.
 White Auto Repair Co., 502 E. Main St., Chanute, Kans.
 Wilkie's Machine Works, 208 W. Third St., Winona, Minn.
 Woodruff Engineering Co., 5515 Euclid Ave., Cleveland, O.
 Woodward, Geo. H., 1455 Bush St., San Francisco, Cal.
 Youngstrom Co., Carl, 417 12th St., Des Moines, Ia.
 Zumbach Machine Co., 134-36 W. 54th St., New York, N. Y.

CYLINDERS, Repairing of Scored

(See also Welding; also Cylinders, Regrinding of)

Automotive Engineering Co., Dayton, O.
 Blanchette Welding Co., 149-51 S. Broadway, Denver, Colo.
 Buckeye Welding & Repair Shop, 133 Water St., Lima, O.
 Charter Oak Machine Co., 438 Asylum St., Hartford, Conn. (See page 321.)
 Day Welding Co., 43 Sumner Ct., N. W., Washington, D. C.
 Eagle Machine Co., 34 N. Noble St., Indianapolis, Ind.
 Emerson Mfg. Co., 3529 Gratiot Ave., Detroit, Mich.
 Heine Machine Works, 4160 Minnehaha Ave., Minneapolis, Minn.
 Hoag Welding Co., 31 E. Court St., Springfield, Mass.
 Lawrence & Co., L., 392 Halsey St., Newark, N. J.
 Pondelick Bros., 215 S. Leavitt St., Chicago, Ill.
 Scored Cylinder Repair Works, 325 N. Jefferson Ave., St. Louis, Mo.
 Trindl Co., Wabash Ave. & 20th St., Chicago, Ill. (See page 637.)

Wilkes-Barre Welding & Machine Co., 28-30 E. Ross St., Wilkes-Barre, Pa.

DASH CARBURETOR CONTROLS FOR FORDS—See Controls, Dash Carburetor

DASH CONTROLS—See Controls, Dash and Steering Column Carburetor

DASH CONTROLS FOR FORDS—See Controls, Dash Carburetor

DASH COWLS FOR FORDS—See Cowls, Dash

DASHBOARD GAGES—See Gages

DASHBOARD LAMPS—See Lamps, Electric Dash

DASHBOARD MIRRORS—See Mirrors, Adjustable

DASHBOARD VENTILATORS—See Ventilators, Dashboard

DASHBOARDS—See Dashes

DASHES, Metal

(Pressed or stamped metal dash or instrument boards)

Central Service Corp., 1007 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
 Hayes Mfg. Co., 4526 Maybury Grand Ave., Detroit, Mich.
 Hell Co., 1136-40 Montana Ave., Milwaukee, Wis. (See page 459.)
 Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y.
 Parish Mfg. Co., Reading, Pa.
 Sheet Steel Products Co., Bryan, O.
 Wemsco—See Western Metal Specialty Co.
 Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemsco."

DASHES, Wood

(Laminated wood dash or instrument boards)

Almapex Veneer & Seating Co., Algoma, Wis.
 American Veneer Co., 15th & Clinton Sts., Hoboken, N. J.
 Bay City Auto Body Co., Center Ave. & Pere Marquette R. R., Bay City, Mich.
 Builders Mfg. Co., 828-30 N. Wells St., Chicago, Ill. (See page 123.)
 Dann Bros. & Co., 84 Franklin St., New Haven, Conn.
 Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.
 Eggers Veneer Seating Co., F., 19th St. & Jefferson Ave., Two Rivers, Wis.
 Gillette Motor Products Corp., Howard City, Mich.
 Grand Rapids Veneer Works, 300-300 Front St., Grand Rapids, Mich.
 Hanson-Ward Veneer Co., Bay City, Mich.
 Hartford Pattern & Model Co., 120 Allyn St., Hartford, Conn.
 Haskellite Mfg. Corp., 133 W. Washington St., Chicago, Ill.
 Louisville Veneer Mills, 1100 River Rd., Louisville, Ky.
 New Jersey Veneer Co., 268 W. Railway Ave., Paterson, N. J.
 Roddis Lumber & Veneer Co., Marshfield, Wis.
 Standard Cabinet Mfg. Co., E. Canal St., Peru, Ind.
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DECALCOMANIA MONOGRAMS — See Transfers, Decalcomania

DECALCOMANIA TRANSFERS — See Transfers, Decalcomania

DECARBONIZING MACHINES—See Machines, Engine Decarbonizing

DEFLATING TOOLS—See Tools, Tire Deflating

DEFLATORS, TIRE—See Tools, Tire Deflating; also Machines, Tube Deflating

DEFLECTING LENSES—See Dimmers or Shades, Headlight

DEFLECTORS, Exhaust, for Fords

(Stamped steel attachment for end of exhaust pipe to deflect the exhaust gases from spare tires or any part of a car)

Corcoran Mfg. Co., 4634 Spring Grove Ave., Cincinnati, O.

Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

DEFLECTORS, Heat, for Fords

(Rubber or metal deflectors to attach to front door board to prevent heat from motor entering body)

Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Home Light Co., 3853 Milwaukee Ave., Chicago, Ill.

Metal Specialties Mfg. Co., 333-53 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)

Presto—See Metal Specialties Mfg. Co.

Wallingford & Acres, 165 High St., Boston, Mass.

DEFLECTORS, LIGHT—See Dimmers or Shades

DEFLECTORS, MUD, FOR FORDS—See Fans, Radiator Splash

DEFLECTORS, Oil, for Fords

Perfactor Mfg. Co., 206 S. Spring St., Los Angeles, Cal.

DEFLECTORS, WIND—See Shields, Auxiliary Wind

DEMOUNTABLE DISC WHEELS — See Wheels, Demountable Disc

DEMOUNTABLE HUBS FOR FORDS—See Hubs, Demountable

DEMOUNTABLE RIM BOLTS—See Bolts, Special Demountable Rim

DEMOUNTABLE RIM CONTRACTING TOOLS—See Tools, Demountable Rim Contracting

DEMOUNTABLE RIM SHIMS—See Plates, Demountable Rim Wedge

DEMOUNTABLE RIM WEDGE PLATES—See Plates, Demountable Rim Wedge

DEMOUNTABLE RIMS—See Rims, Removable

DEMOUNTABLE RIMS FOR FORDS—See Rims, Demountable

DEMOUNTABLE WHEEL CARRIERS FOR FORDS—See Holders, Spare Wheel

DEMOUNTABLE WHEELS FOR FORDS—See Hubs, Demountable

DEMOUNTABLE WIRE WHEELS — See Wheels, Demountable Wire

DENATURED ALCOHOL—See Alcohol, Denatured

DENATURED ETHER—See Ether, Denatured

DEPTH GAGES—See Gages, Depth

DESIGNERS, Special Machinery and Tool

Dowd Engineering Co., Albert A., 131 W. 39th St., New York, N. Y.

Pratt & Whitney Co., 111 Broadway, New York, N. Y.

Taft-Peirce Mfg. Co., Woonsocket, R. I.

DETACHABLE RIMS—See Rims, Removable

DEVICES, KEROSENE, FOR FORDS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake and Exhaust

DIALS, CLOCK—See Dials, Luminous

DIALS, Luminous

(Concerns who illuminate clock, gage and meter dials; for Luminous Materials—See Paints, Luminous.)

General Etching & Mfg. Co., 313 S. Hamilton Ave., Chicago, Ill.

Luma—See Radium Dial Co.

Radium Dial Co., Forbes & Meyran Aves., Pittsburgh, Pa. "Luma."

Undark—See United States Radium Corp. United States Radium Corp., 58 Pine St., New York, N. Y. "Undark." (See page 325.)

DIALS, SPEEDOMETER—See Dials, Luminous

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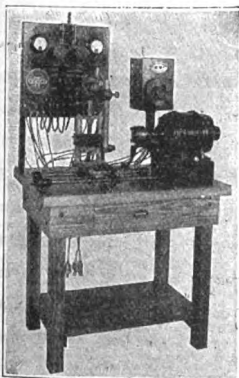
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DIE CASTINGS—See Castings, Die

DIE CUTTING MACHINES—See Machines, Die Cutting

DIE STOCKS—See Stocks, Die

DIES, FORGING—See Dies, Jigs, Tools and Fixtures

DIES, JIGS, TOOLS and FIXTURES

Acme Electric & Mfg. Co., 1444 Hamilton Ave., Cleveland, O.

Acme Engineering & Mfg. Co., 355 Union Park Ave., Chicago, Ill.

Acme Tool & Die Co., 314 E. Water St., Syracuse, N. Y.

Adell Mfg. Co., Orange, Mass.

Advance Mfg. & Tool Co., 1344 St. Clair Ave., S. E., Cleveland, O.

Advance Tool Works, 2300 Warren Ave., Chicago, Ill.

Ainge Tool Die & Machine Works, Geo. H., Springfield, O.

Albany Machine & Tool Co., 1031 Broadway, New York, N. Y.

Alent Machine Tool Co., Rochester, N. Y.

Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich.

American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich.
(See page 913.)

American Tool, Die & Machine Co., 1114-20 E. Tenth St., Indianapolis, Ind.

American Tool & Mfg. Co., Urbana, O.

Andis Tool Co., 1218 Washington St., Racine, Wis.

Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.

Arrow Tool & Mfg. Co., 220 Cannon St., Bridgeport, Conn.

Atcheson Tool & Die Co., 609-11 N. Fourth St., Columbus, O.

Atlas Mfg. Co., 125 Water St., New Haven, Conn.

Ault Engineering Co., Frank, U. B. Bldg., Dayton, O.

Automatic Machine Co., 1150 W. Second St., Dayton, O.

B. & B. Mfg. Co., 2255 Lake St., Chicago, Ill.

B. & W. Tool & Die Co., 103 St. Clair Ave. N. W., Cleveland, O.

Badger Die Casting Co., 159 Buffalo St., Milwaukee, Wis.

Baldwin Mfg. Co., Sparta, Mich.

Bavner, Nelson, Cobalt, Conn.

Bay State Machine & Tool Co., 30 Cypress Co., Springfield, Mass.

Beaver Machine & Tool Co., 625-43 N. Third St., Newark, N. J.

Bender & Sons, P. J., 87 Frankfort St., New York, N. Y.

Berggren & Pearson Machine Co., 231-27 Canal Street, New York, N. Y.

Bersted Forming Tool Co., 765-71 Mather St., Chicago, Ill.

Blodgett Engineering & Tool Co., Roosevelt Pk., 14th & Dalselle Sts., Detroit, Mich.

Blum & Co., Wm., 719 S. 15th St., Newark, N. J.

Bond Machine Co., 815-25 W. Fifth St., Wilmington, Del.

Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.

Bowling Green Die & Tool Co., 635 E. Wooster St., Bowling Green, O.

Brady Tool & Die Corp., 236 Mill St., Rochester, N. Y.

Bremer & Co., 139 N. Seventh St., Philadelphia, Pa.

Bridgeport Die & Machine Co., 170 Elm St., Bridgeport, Conn.

Bridgeport Engineering Co., Seymour & Stratford Sts., Bridgeport, Conn.

Bridgeport Silverware Mfg. Corp., 65 Hallard St., Bridgeport, Conn.

Bristol Industries, Inc., Woolworth Bldg., New York, N. Y.

Broadway Tool & Machine Co., 717 Livingston St., Elizabeth, N. J.

Brook, Jr., Tool & Mfg. Works, Arthur, 533 N. 11th St., Philadelphia, Pa.

Brubaker & Bros., W. L., 50 Church St., New York, N. Y.

Buerk Tool Works, 38 Pearl St., Buffalo, N. Y.

Budd-Ranney Engineering Co., 44 E. Chestnut St., Columbus, O.

Bultman Co., F. H., 10271 Berea Rd., Cleveland, O.

Burgess Machine Co., 45 Chestnut St., New Haven, Conn.

Capital Die, Tool & Machine Co., 619-21 N. Fourth St., Columbus, O.

Capital Tool & Die Works, 1100 Oakdale Ave., Chicago, Ill.

Carde Stamping & Tool Co., West Side, Saginaw, Mich.

Carpenter Mfg. Co., E. W., 1555 Railroad Ave., Bridgeport, Conn.

Carroll Engineering Co., Dayton, O.

Cartwright Die & Tool Co., 2962 Hart Ave., Detroit, Mich.

Central Machine Works, 19 Church St., Worcester, Mass.

Central Machine Works, 1911 N. 12th St., St. Louis, Mo.

Central Tool & Die Co., 501 E. Third St., Dayton, O.

Challenge Gauge & Tool Co., 16-22 W. South St., Indianapolis, Ind.

Chester Die Sinking & Machine Co., Chester, Pa.

Chicago Tool Co., 542 W. Jackson Blvd., Chicago, Ill.

City Engineering Co., Beaver Power Bldg., Dayton, O.

Clark-Mesker Co., 18511 Euclid Ave., Cleveland, O.

Cleveland National Machine Co., 1386 W. 70th St., Cleveland, O.

Cleveland Steel Tool Co., 650 E. 32nd St., Cleveland, O.

Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.

Collamer Machine Works, 1214 E. 152d St., Cleveland, O.

Colonial Stamping Co., Brill St. & Morris Canal, Newark, N. J.

Columbus Die, Tool & Machine Co., 955 Cleveland Ave., Columbus, O.

Conner Machine & Tool Co., 58 Harrison Ave., Springfield, Mass.

Cooney-Dunn Co., 73 Grand St., New York, N. Y.

Cotton, H. W., Woolworth Bldg., New York, N. Y.

Cradock, Edward S., 231 E. 144th St., New York, N. Y.

Criterion Tool & Engineering Co., 501 E. Third St., Dayton, O.

D. & D. Machine & Tool Co., 16-20 Jefferson Ave., Elizabeth, N. J.

Damon & Glenn, 189 High St., Boston, Mass.

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- Dayton Irrigation Co., 261-63 High St., Dayton, O.
- Delaware Engineering Co., C. & Buttonwood Sts., Wilmington, Del.
- Detroit Stamping Co., 3445-59 W. Fort St., Detroit, Mich.
- Diamant Tool & Mfg. Co., 91-97 Runyon St., Newark, N. J.
- Dimler-Himes Tool Co., Third & Canal Sts., Dayton, O.
- Dodge Tool Co., 721 Main St., Grinnell, Iowa.
- Dominick & Co., Wm., 2220 Indiana Ave., Chicago, Ill.
- Dorchester Machine & Tool Works, 70 Freeport St., (Dorchester) Boston, Mass.
- Douglas & Lomason Co., 5335 Lincoln Ave., Detroit, Mich.
- Dover, George W., 1012 Eddy St., Providence, R. I.
- Du Bois Machine Shop, 118-28 Hudson Ave., Albany, N. Y.
- Dunner Machine Co., 220 Centre St., New York, N. Y.
- Duplex Machine Co., 93 Lafayette St., Newark, N. J.
- E. H. Machine Co., 234 Maple St., Weehawken, N. J.
- Eagle Engineering Co., W. Main St. & Bell Ave., Springfield, O.
- Elite Machine & Tool Works, 230 W. 19th St., New York, N. Y.
- Ellicott Machine Co., 160 Ellicott St., Buffalo, N. Y.
- Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.
- Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
- Eureka Tool & Machine Co., 42 Walnut St., Newark, N. J.
- Eveready Mfg. Co., 80 Boylston St., Boston, Mass.
- Excelsior Tool & Mfg. Co., 96-98 Fulton St., New York, N. Y.
- Fairbanks-Schock Co., 3353 University St., Minneapolis, Minn.
- Farrell & Stoneham Engineering Co., Mutual Home Bldg., Dayton, O.
- Feeney Tool Co., 751 Central Ave., Bridgeport, Conn.
- Fenton Machine Tool & Die Co., Inc., Fenton, Mich. (See page 327.)
- Franklin Die Tool Co., Columbus, O.
- Franklin Machine & Tool Co., Springfield, Mass. (See page 509.)
- Frostholm Bros., 221 Washington Sq., Syracuse, N. Y.
- Fulton Machine Tool Co., 1422 W. Randolph St., Chicago, Ill.
- G-H-P Mfg. Co., 128 N. Main St., Providence, R. I.
- Gacke Engineering Co., Dayton, O.
- Geer Machine Works, Wm. E., 113 Summit Ave., (E. Liverpool) Liverpool, O.
- Gem City Machine Co., 436 E. First St., Dayton, O.
- Gem Snap Fastener Co., 2349 Summerfield St., Brooklyn, N. Y.
- General Machine & Mfg. Co., 640 Iranston Ave., Bridgeport, Conn.
- General Mfg. Co., 255 Meldrum Ave., Detroit, Mich.
- General Ordnance Co., Derby, Conn.
- General Stamping & Mfg. Works, 1652 W. Belmont Ave., Chicago, Ill.
- Genesee Precision Tool & Die Co., 105 N. Water St., Rochester, N. Y.
- Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
- Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
- Gloor, Geo. A., 646 Catherine St., Detroit, Mich.
- Gnome Machine & Tool Co., 820 Livingston St., Elizabeth, N. J.
- Goode Machine Co., 315 Union Park Ct., Chicago, Ill.
- Grand Tool & Machine Works, 161 Grand St., New York, N. Y.
- Grant Mfg. & Machine Co., 18 Stillman Ave., Bridgeport, Conn.
- Great Lakes Pressed Steel Corp., 1400 Niagara St., Buffalo, N. Y.
- Griscom-Russell Co., Massillon, O.
- Gumphert & Sons Co., George A., 240-42 Cherry St., Philadelphia, Pa.
- Gurnard Mfg. Co., 97 Rantoul St., Beverly, Mass.
- H. L. G. Mfg. Co., W. 29th St. & Canal, Indianapolis, Ind.
- H. L. & W. Sales & Mfg. Co., 2755 W. Fourth St., Detroit, Mich.
- Hammarlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.
- Hampden Tool Co., 238 Dwight St., Springfield, Mass.
- Hannay Stamping Works, 3102 Woodbridge St., Detroit, Mich.
- Hart Machine & Tool Co., 364 Atlantic Ave., Boston, Mass.
- Harvey Mfg. Co., 1862 State St., Bridgeport, Conn.
- Hearn Machine Works, J. C., Columbus, O.
- Hedges Co., B. E., Genesee & Division Sts., Auburn, N. Y.
- Hergl Mfg. Co., Bridgeport, Conn.
- Hinman, A. T., 628 Race St., Philadelphia, Pa.
- Holm's Mfg. Co., Fairfield & Racine Aves., Kenosha, Wis.
- Horak Tool & Die Works, 1027 N. Hamlin Ave., Chicago, Ill.
- Horat Mfg. Co., J., Lafayette, Ind. (See page 420.)
- Hub Engineering & Machine Co., Hamilton St., Bound Brook, N. J.
- Hes Mfg. Co., E. W., Shelton, Conn.
- Industrial Tool, Die & Engineering Co., 823 E. Fifth St., Dayton, O.
- International Tool & Gauge Co., 706 Howard Ave., Bridgeport, Conn.
- Iroquois Tool & Stamping Co., 909-17 Genesee St., Buffalo, N. Y.
- J. C. H. Automatic Machine Works, 2434 N. Fairhill St., Philadelphia, Pa.
- Jensen & Co., O. C., 1923 Park Ave., New York, N. Y.
- Jewelers Toolmaking Co., 220 Eddy St., Providence, R. I.
- Johnson Mfg. Co., 103 N. Front St., Philadelphia, Pa.
- Johnson Tool Co., 197-99 Eddy St., Providence, R. I.
- Joliet Die & Tool Co., Joliet, Ill.
- Jonas, Mark W., 53rd St. & Lansdowne Ave., Philadelphia, Pa.
- Jurack Co., Chas., 600 S. Pierce St., Milwaukee, Wis.
- Kameo Corp., 34 Barclay St., New York, N. Y.
- Kanters Stamping & Mfg. Co., Shaw Ave. & 133rd St., Cleveland, O.
- Keavany & Son, W. R., 185 Bunker Hill Rd., Waterbury, Conn.
- Kell, Hock & Co., 354 Mulberry St., Newark, N. J.
- Keller Mechanical Engraving Co., 72 Washington St., Brooklyn, N. Y.

Everything is listed under the NOUN or principal word



WEED TIRE CHAINS

The Magnet
that draws
profitable trade



DISPLAY WEED CHAINS in your windows and sales rooms and you display good sound business judgment as well. You will attract all types of cars to your doors—they all must use Weed Chains for safety's sake.

Post mortems are never held over Weed Chains—they never make dead stock. Even when roads and pavements are dry, the experienced motorist will buy—"In time of sunshine he prepares for rains, stops at his dealer's and buys Weed Chains."

Don't forget to order a stock of Weed Cross Chains, too. We will send you attractive advertising material for your counter and windows if you will but write for it. Now's the time. Write for it now.

American Chain Co., Inc.
Bridgeport  Connecticut

In Canada: Dominion Chain Co., Ltd., Niagara Falls, Ont.

General Sales Office: Grand Central Terminal, New York City

District Sales Office: Boston, Chicago, Philadelphia, Pittsburgh, San Francisco, Portland, Ore.

Please mention The Automobile Trade Directory

DIES, JIGS, TOOLS and FIXTURES (Continued)

- Keller Pneumatic Tool Co., Grand Haven, Mich.
- Keystone Production & Mfg. Co., 1835 W. 22nd St., Chicago, Ill.
- Kiekhoefer Mfg. Co., Dept. A., 350-71 Reed St., Milwaukee, Wis.
(See page 807.)
- Kihm-Bowen Machine Co., 146 Colt St., Irvington, N. J.
- King Works, 7350 St. Aubin Ave., Detroit, Mich.
- Knowles Tool Mfg. Co., 125 N. Webster St., Dayton, O.
- Koehler Mfg. Co., Marlboro, Mass.
- Konigsloew Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
- Krebs Mfg. Co., 241 E. Ohio St., Chicago, Ill.
- L. & L. Mfg. Co., 134 High St., Newark, N. J.
- L-T-L Tool Co., 1320 Woodruff Ave., Rockford, Ill.
- La Crosse Hinge & Lock Co., 907 S. Front St., La Crosse, Wis.
- La Crosse Pattern Works, Rose & Gillette Sts., La Crosse, Wis.
- Lansing Stamping Co., Lansing, Mich.
(See page 811.)
- Larned Tool & Die Co., 1326 E. Woodbridge St., Detroit, Mich.
- Lazarides Mfg. Co., 56 Beekman St., New York, N. Y.
- Levy, Benj., 355 W. Broadway, New York, N. Y.
- Liberty Electric Co., 97 Haverhill St., Boston, Mass.
- Liberty Tool Co., 577 S. Tenth St., Newark, N. J.
- Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.
- Lidseen, Gustave, 832-40 S. Central Ave., Chicago, Ill.
- Lincoln Machine Co., 1086 Main St., Pawtucket, R. I.
- Linden & Co., 891 Broad St., Providence, R. I.
- Lindstrom Die, Tool & Gauge Works, L. 50 Silliman St., Bridgeport, Conn.
- Link Tool & Machine Co., 176-82 Worth St., New York, N. Y.
- Loeffler & Co., H., 297 Washington St., Newark, N. J.
- Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
- Lucas-Miner Tool & Production Co., 427 Valley St., Dayton, O.
- Luers Bros. Machinery & Tool Co., Maple & Rivard Sts., Detroit, Mich.
- Lynn Machine & Screw Co., 496 Washington St., Lynn, Mass.
- McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.
- McCuen & Graves, 4100 Ravenswood Ave., Chicago, Ill.
- McCulloch Mfg. Co., 216 High St., Boston, Mass.
- McGuire Tool & Die Works, J. J., 816 Livingston St., Elizabeth, N. J.
- McIntyre Machine Works, 78 Grove St., Hartford, Conn.
- Mantle & Co., 1907 Park Ave., New York, N. Y.
- Manufacturers Tool & Die Co., 23 S. Water St., Rochester, N. Y.
- Marvin Mfg. Co., W. B., Urbana, O.
- Matthews Engineering Co., 460 Monroe St., Sandusky, O. (See page 365.)
- Maute Sons Die & Tool Works, J., 21-23 Kane St., Buffalo, N. Y.
- Mehl Machine Tool & Die Co., 547 E. First Ave., Roselle, N. J.
- Metal Parts Mfg. Co., 1034 E. 152d St., Cleveland, O.
- Metal Products Mfg. Co., 241-43 W. 23d St., New York, N. Y.
- Meyers Co., W. F., 13th & J Sts., Bedford, Ind.
- Miami Tool & Die Co., St. Paul St. & E. Huffman Ave., Dayton, O.
- Michigan Forge & Tool Co., 7360 Richmond Ave., Detroit, Mich.
- Michigan Pattern & Machine Works, 3429-39 E. Jefferson Ave., Detroit, Mich.
- Miller, Julius W., 22 Raymond St., So. Norwalk, Conn.
- Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich.
- Milwaukee Metal Working Co., 332-33 Clinton St., Milwaukee, Wis.
- Modern Tool Die Machine Co., 214-20 Fourth St., Columbus, O.
- Modern Tool & Machine Works, 344-50 Mulberry St., Newark, N. J.
- Modern Tool & Mfg. Co., 121 Opera Pl., Cincinnati, O.
- Moline Pressed Steel Co., Fifth St., East Moline, Ill.
- Monarch Tool & Machinery Co., 523 S. Clinton St., Chicago, Ill.
- Monarch Tool & Mfg. Co., 118-22 Opera Pl., Cincinnati, O.
- Montgomery Tool & Mfg. Co., First & Madison Sts., Dayton, O.
- Moody Tool Works, Chas. J., 60 River St., Elgin, Ill.
- Moore-Eastwood Mfg. Co., Dayton, O.
- Moore & Co., 301 W. Grand Ave., Chicago, Ill.
- Moran Machine Co., John F., 103-07 Grape St., Syracuse, N. Y.
- Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn.
- Murchey Machine & Tool Co., 951 Porter St., Detroit, Mich.
- Murphy Die & Machine Co., A. F., 364-68 Atlantic Ave., Boston, Mass.
- National Automatic Tool Co., S. Seventh & N. Sts., Richmond, Ind.
- National Indicator Co., 852 Vernon Ave., Long Island City, N. Y.
- National Metal Stamping & Mfg. Co., Mulberry & Murray Sts., Newark, N. J.
- National Production Co., Benson & Bellevue Sts., Detroit, Mich.
- National Steel Products Co., 1611-21 Crystal Ave., Kansas City, Mo.
- Neff & Morse, 904 Washington St., Boston, Mass.
- Nelson Tool Co., 782 E. 143d St., New York, N. Y.
- Nestor Mfg. Co., 40 W. 13th St., New York, N. Y.
- New Process Specialty Co., 230-32 Hanover St., Milwaukee, Wis.
- Newark Tool & Die Co., 20-23 Lawrence St., Newark, N. J.
- Nilson Machine Co., A. H., 1525 Railroad Ave., Bridgeport, Conn.
- North Dayton Machine & Tool Co., 126 Valley St., Dayton, O.
- North Star Specialty Co., 1834 University Ave., St. Paul, Minn.
- Omar Tool & Machine Co., 17th & Clinton Sts., St. Louis, Mo.
- Parker Machine Co., 221 High St., Boston, Mass.
- Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
- Pearce Co., Fred'k., 18-20 Rose St., New York, N. Y.
- Phenix Truck Makers, 4948 Bloomingdale Rd., Chicago, Ill.
- Pittsburgh Reinforced Brazing & Machine Co., 2525 Liberty Ave., Pittsburgh, Pa.
- Plum & Little, 30 N. Water St., Rochester, N. Y.

Everything is listed under the NOUN or principal word

DIES, JIGS, TOOLS and FIXTURES
(Continued)

- Potter Tool & Machine Works, E. A., 69 E. 130th St., New York, N. Y.
- Power Vossburg Co., 445 W. Larned St., Detroit, Mich.
- P-R-E-C-I-S-E Mfg. Corp., Rochester, N. Y.
- Precision Gauge & Tool Co., 166 Elm St., Bridgeport, Conn.
- Premier Machine Tool Works, 1081 Broadway, Albany, N. Y.
- Producers Machine & Specialty Corp., 61-65 Elizabeth St., Rochester, N. Y.
- Progressive Tool Mfg. Co., Fifth St., Beloit, Wis.
- Proviso Tool & Machine Co., 6 N. Eighth Ave., Maywood, Ill.
- Queen City Tool Co., 778 Kensington Ave., Buffalo, N. Y.
- Queensboro Tool & Die Co., 136 West Ave., Long Island City, N. Y.
- Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
- Reliable Tool Co., 66 Coit St., Irvington, N. J.
- Reliance Die & Stamping Co., 515 N. La Salle St., Chicago, Ill.
- Rex Machine & Tool Co., 24 Scott St., Newark, N. J.
- Reynolds Engineering Co., First St. & Third Ave., Moline, Ill.
- Richard Bros. Die Works, 1560-74 Milwaukee St., E., Detroit, Mich.
- Riverside Machine Co., Front & Penn Sts., Chester, Pa.
- Robbins, Gamwell & Co., Pittsfield, Mass.
- Rochester Auto & Tool Co., 17 Andrews St., Rochester, N. Y.
- Rockford Drilling Machine Co., Foot Catherine St., Rockford, Ill.
- Rockford Metal Specialty Co., 720 S. Main St., Rockford, Ill.
- Root Co., B. M., 30-36 Jefferson Ave., York, Pa.
- Ross Machine Co. (Wollaston), Quincy, Mass.
- S-P Mfg. Co., 872 E. 72d St., Cleveland, O.
- S. & H. Machine & Tool Co., 23 Elizabeth St., Albany, N. Y.
- Saal Co., H. G., 1800 Montrose Ave., Chicago, Ill.
- Saginaw Stamping & Tool Co., ft. Williamson St., Saginaw, Mich.
- Saunders Co., James, 24-26 N. Canal St., Dayton, O.
- Schroeder Bros. Mfg. Co., 110 Brook St., Torrington, Conn.
- Seavey Machine Works, Eugene, 359 Pearl St., New York, N. Y.
- Security Tool Works, Jackson Blvd., Chicago, Ill.
- Shambow Shuttle Co., 601 N. Main St., Woonsocket, R. I.
- Shipman Machine Co., 218 Summer St., Boston, Mass.
- Simplex Tool Co., Social St., Woonsocket, R. I.
- Sloan & Chace Mfg. Co., 351 Sixth Ave., Newark, N. J.
- Smith Mfg. Co., W. F., 167 Stratford Ave., Bridgeport, Conn.
- Smith Tool & Mfg. Co., R. G., 245-47 N. J. R. R. Ave., Newark, N. J.
- Sommer-Adams Co., 2934 E. 55th St., Cleveland, O.
- Specialty Gauge & Tool Co., 30-32 E. Georgia St., Indianapolis, Ind.
- Standard Die Casting Co., 600 S. Pierce St., Milwaukee, Wis.
- Standard Electric Mfg. Co., 126 South St., Newark, N. J.
- Star Tool & Mfg. Co., 4520 Lexington St., Chicago, Ill.
- Stieber Machine Co., 713 First St., Utica, N. Y.
- Stauffer & Son, P. S., 63 Governor St., Springfield, Mass.
- Steinen & Co., Wm., 297 Washington St., Newark, N. J.
- Steiner Bros., Haller St., Lima, O.
- Stemco Engineering Co., Second & Webb Sts., Dayton, O.
- Sterling Cork & Seal Co., 1612 Oakwood Ave., Toledo, O.
- Sterling Tool & Mfg. Co., 495 Broadway, Milwaukee, Wis.
- Sterling Tool & Machine Co., 205-09 W. 19th St., New York, N. Y.
- Sterns Aero Parts Co., 203 St. Claire Ave., N. E., Cleveland, O.
- Stewart-Skinner Co., 17 Green St., Worcester, Mass.
- Sundstrom Mfg. Co., Shields Ave. at 32d St., Chicago, Ill.
- Superb Mfg. Co., Monticello, Ind.
- Superior Mfg. Co., 1109 Race St., Philadelphia, Pa.
- Superior Tool & Die Works, 313 S. Clinton St., Chicago, Ill.
- Superior Tool & Engineering Co., 611 N. Capital Ave., Indianapolis, Ind.
- Superior Tool & Mfg. Co., 3 Reeves St., Worcester, Mass.
- Swissgabel Mfg. Co., C. F., Dayton, O.
- T. & D. Mfg. Co., 207 Canal St., New York, N. Y.
- Taft-Pierce Mfg. Co., Woonsocket, R. I.
- Taylor-Shantz Co., 478 St. Paul St., Rochester, N. Y.
- Thorn Machine Tool Works, 107 N. Franklin St., Syracuse, N. Y.
- Thurston Mfg. Co., 140 Benedict St., Providence, R. I.
- Tisch Machine Tool & Die Works, 452-54 Spring St., Elizabeth, N. J.
- Tool & Auto Products Co., St. Clair & E. 49th St., Cleveland, O.
- Tool & Machine Products Co., Waldo St., Newark, O.
- Tremont Tool & Die Corp., 2072-74 Valentine Ave., New York, N. Y.
- Triangle Tool Co. of Erie, 162 E. Eighth St., Erie, Pa.
- Triangle Tool & Die Co., 211 Smith St., Rochester, N. Y.
- Turner Novelty Co., John C., Dayton, O.
- Twin City Die & Tool Works, 4523 Sixth Ave., Rock Island, Ill.
- Ulmer Co., J. C., 1791 E. 35th St., Cleveland, O.
- Ultimate Machine Works, 209 Centre St., New York, N. Y.
- Union Gear & Machine Co., 27 Purchase St., Boston, Mass.
- United Machine Works, 55-57 W. Third St., New York, N. Y.
- Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.
- Universal Machine & Tool Co., Canton, O.
- Up-To-Date Machine Works, 2015 Wabash Ave., Chicago, Ill. (See page 735.)
- Valley Engineering Co., 427 Valley St., Dayton, O.
- Varick Machine & Tool Works, 143 Varick St., New York, N. Y.
- Viking Tool & Machine Co., 56th St. bet. Seventh & Eighth Aves., Brooklyn, N. Y.
- Vulcan Tool Co., 418 E. First St., Dayton, O.
- W. B. W. Tool Co., Main & Bruen Sts., Dayton, O.
- Wade-American Tool Co., 49-59 River St., Waltham, Mass.
- Walker & Barkman Mfg. Co., 408 Main St., Hartford, Conn.
- Wallace & Henry, 241-43 W. 23rd St., New York, N. Y.

Everything is listed under the NOUN or principal word

DIES, JIGS, TOOLS and FIXTURES (Continued)

Wayne Tool Co., 642 Catherine St., Detroit, Mich.
Weber & Scher Mfg. Co., 24 Scott St., Newark, N. J.
Weiss, L. T., 295 Taaffe Pl., Brooklyn, N. Y.
West Michigan Machine Tool Co., 231 Ionia Ave., Grand Rapids, Mich.
West & Dodge Co. (Faniuel Sta.), Boston, Mass.
Western Tool & Machine Works, 127 N. Wells St., Chicago, Ill.
Whalley Co., A. H., 209 Cranston St., Providence, R. I.
White-Quehl Mfg. Co., 427 E. Pearl St., Cincinnati, O.
Whiting & Comstock, Hartford, Conn.
Wing & Co., J. T., 129 Woodward Ave., Detroit, Mich.
Woody Machine Works, 738-800 W. Washington St., Indianapolis, Ind.
Worth Tool & Machine Co., 1913 Second Ave., New York, N. Y.
Wright-Fisher Engineering Corp., 4087 E. Grand Blvd., Detroit, Mich.
York Electric & Machine Co., 30-34 N. Penn St., York, Pa.
Young & Franklin, Industrial Bldg., Syracuse, N. Y.
Zarem & Rose, 174 Centre St., New York, N. Y.
Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 595.)
Zuhr, Henry, 200 William St., New York, N. Y.
Zumeta Machine Co., 310 W. 39th St., New York, N. Y.

DIES, SCREW CUTTING—See Tape and Dies

DIES, STAMPING—See Dies, Jigs, Tools and Fixtures

DIFFERENTIAL ASSEMBLY PLATES FOR FORDS—See Plates, Differential Assembly

DIFFERENTIAL GEARS—See Gears, Differential

DIFFERENTIALS, COMPLETE—See Gears, Differential

DIMMERS, Glare

(Colored Glass or Celluloid Attachment for Wind shield to dim the glare from approaching headlights)

Auto Glass & Mirror Corp., 314 Jefferson Ave., Buffalo, N. Y. (See page 587.)
Auto Light Glare Shield Co., 1144 Broadway, Denver, Colo. "Barhart."
Auto Sunshade Co., 1237-30 S. Figueroa St., Los Angeles, Cal.
Barhart—See Auto Light Glare Shield Co.
Brett Dimmer Co., A. H., Mason City, Ia.
Custer's—See Ray Filter Co.
Gilbert, Woodland H., Peoples Bank Bldg., St. Paul, Minn.
Glar-Stop—See Sedgwick Sales Co.
Glaroscope—See Randall-Falchney Co.
Metal Goods Mfg. Co., 566 Commercial St., Boston, Mass.
Metropolitan Air Goods Co., Marble St., Athol, Mass.
Nasco—See National Souvenir Co.
National Souvenir Co., 218-19 N. Cedar St., Owatonna, Minn. "Simplex," "Nasco."
Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Glaroscope."
Ray Filter Co., Marion, Ind. "Custer's."

Safe-Tee-Scope Co., 75 S. Laurel St., Bridge-ton, N. J.

Sedgwick Sales Co., 1405 Sedgwick Ave., New York, N. Y. (Sole Distributors for Smith "Glar-Stop" Specialty Co., Philadelphia, Pa. "Glar-Stop.")
(See page 407.)

Simplex—See National Souvenir Co.
Smith "Glar-Stop" Specialty Co.—See Sedgwick Sales Co.

Stadco—See Stadeker Metal Specialty Co.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."

Windshield Dimmer Co., 307 E. Fifth St., Cincinnati, O.

DIMMERS or SHADES, Headlight

(Deflecting and deflecting lenses or glasses, special shades and reflectors, hood and screens, two file ment bulbs, etc.)

Aderente—See Jay & Dee Specialty Co.

Alvo Mfg. Co., Ashland, O.

Amco—See Art Metal Mfg. Co.

American Mantle Co., Anderson, Ind. "Safety-First."

Ames—See Heinze Electric Co.

Amesbury Bent Glass Co., Amesbury, Mass.

Ange, L. W., 198 Broadway, New York, N. Y.

Art Metal Mfg. Co., E. 61st St. & Curtis Ave., Cleveland, O. "Amco."

Atlas Trading & Navigation Co., Monadnock Bldg., San Francisco, Cal. (Sole Distributors for Torrance Glass Co., Los Angeles Cal.)

Bausch & Lomb Optical Co., Rochester, N. Y. (See page 337.)

Bear-On Sales & Products Corp., 711 Boylston St., Boston, Mass. "Hed-lite."

Benzer Corp., Myrtle, Cooper & Webster Aves., Brooklyn, N. Y. (See page 335.)

Bird & Co., C. E., Minneapolis, Minn.

Bradsto Appliances, 65 Main St., Buffalo, N. Y. "Full-Ray."

Brett Dimmer Co., A. H., Mason City, Ia.

Brown Reflector, Inc., 25 Jersey St., Boston, Mass. "Roadwide."
(See page 335.)

Brownie Mfg. Co., Alaska Bldg., Seattle, Wash.

Burgess Mfg. Co., Walter S., 500 Pleasant St., St. Joseph, Mich. "Burgiswitch."
(See page 705.)

Burgiswitch—See Burgess Mfg. Co.

Butterfly—See Sparta Mfg. Co.

Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for Corning Glass Works, Corning, N. Y. "Conaphore.")

Chicago Eye Shield Co., 2300 Warren Ave., Chicago, Ill. "Mel-O-Lite."

Clamert Mfg. Co., Latrobe, Pa.

Conaphore—See Corning Glass Works.

Corning Glass Works, Corning, N. Y. "Conaphore."

Cortland Auto Supply Co., 30 Main St., Cortland, N. Y. "Lette."

Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Danno."

Danno—See Dannenhirsch Co.

Detroit Right Lens Co., Detroit, Mich. "Right."

Dillon Lens & Mfg. Co., Bridgeport, O.

Dim Auto Lite Switch Co., Monroe, Mich.

Divergo—See Rotary Products Co.

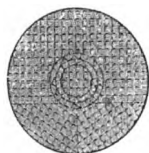
Doe Battery & Novelty Co., S. Water St., Kent, O.

Dubuque Glass Co., Jones & Levee Sts., Dubuque, Ia.

Dunn Mfg. Co., A. C., 1118-26 Third Ave., S., Minneapolis, Minn. "E-Z-2-C."

Dwelle-Kaiser Co., 237-53 Elm St., Buffalo, N. Y. "Dwellight."

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**Retails
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Fits any headlight
Complies with all state headlight laws
You carry but one size
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OPTO is unbreakable
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Fits any headlight from a Ford
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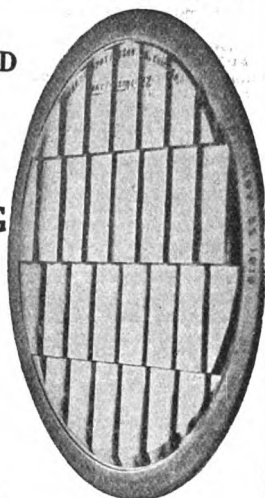
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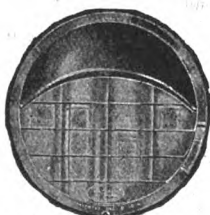


Warner-Patterson Company

914 South Michigan Avenue, Chicago

MACBETH LENS

AN AUTOMOBILE HEADLIGHT LENS
WHICH IS BUILT ON THE SAME FUNDAMENTAL PRINCIPLES OF LIGHT CONTROL
AS THE MARVELOUS MACBETH LIGHTHOUSE LENSES.



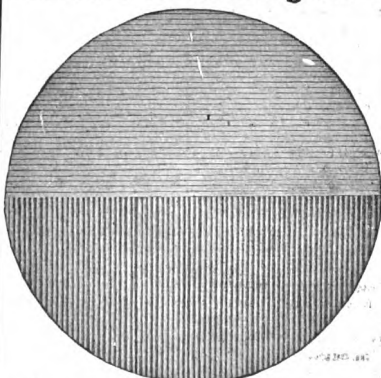
THE green visor and the scientifically accurate prisms on the front together with the concave recesses on the back eliminate all glare and give long range and side lighting necessary for safe driving. The Macbeth Lens is distinctive—this because of the green visor. It took four years to develop the Macbeth Lens and it takes 72 hours to manufacture one lens. It has solved the headlight problem. Macbeth Lenses are made in all sizes to fit standard lamps.

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All sizes \$5.25 per pair
Denver and West..... 5.75 per pair
Canada 6.00 per pair
Winnipeg and West..... 6.50 per pair

Macbeth-Evans Glass Company
Pittsburgh

Saferlite Deflecting Lens



High projection between 100 and 400 feet ahead, with sufficient spread to cover the traffic width of road.

PRICES

Up to 9"—\$1.00 per Pair
Over 9"—\$1.25 per Pair

Prices in and West of the Rockies 50 cents per pair higher.

Write for circular and our nearest distributing point.

SAFERLITE LENS COMPANY

220 Fifth Avenue, Room 1714, New York City

Please mention The Automobile Trade Directory

DIMMERS or SHADES, Headlight (Continued)

Dwellight—See Dwelle-Kaiser Co.
 E-Z-2-C—See Dunn Mfg. Co.
 Eclipse—See Vesta Battery Corp.
 Eclipse Dimmer Co., 122 Sheridan Sq., East End, Pittsburgh, Pa.
 Enemisco—See Northwestern Mirror & Specialty Co.
 Eureka-Lunette—See Siraco-Hammond Co.
 Faw Co., J. H., 27 Warren St., New York, N. Y. "Lennon." (See page 429.)
 Filmolens Sales Co., 1926 Ford Bldg., Detroit, Mich. (See page 335.)
 Flemington Cut Glass Co., Main St., Flemington, N. J. "King."
 Flexo Lens Protector Co., Camden, N. J.
 Fracto, Inc., 161 Massachusetts Ave., Boston, Mass. "Fractors."
 Fractors—See Fracto, Inc.
 Full-Ray—See Bradsto Appliances.
 Glare-Off Co., 90 West St., New York, N. Y.
 Glareless Auto Lens Co., 4531 Ravenswood Ave., Chicago, Ill.
 Glaroscope—See Randall-Falchney Co.
 Glowlite Co., 33 N. High St., Columbus, O.
 Hart & Co., Randolph, Mass.
 Headlight Shield Co., 1810 Stout St., Denver, Colo.
 Hed-Lite—See Pennypacker Mfg. Co.
 Hed-Lite—See Bear-On Sales & Products Corp.
 Heinz Electric Co., Lawrence St., Lowell, Mass. "Ames."
 Holophane Glass Co., 342 Madison Ave., New York, N. Y. (See page 337.)
 Howard Auto Headlight Deflector Co., Detroit, Mich.
 Iowa Optical Co., New London, Ia.
 Jay & Dee Specialty Co., 41 Park Row, New York, N. Y. "Aderente."
 Johanson, Emil G., 1123 Wells St., Chicago, Ill.
 Kamp Auto Supply Co., 707 Second Ave., S., Minneapolis, Minn. "Thuls."
 King—See Flemington Cut Glass Co.
 Kopp's—See Pittsburgh Lamp, Brass & Glass Co.
 L. L. L. D. Mfg. Co.—See Monroe Auto Specialty Co.
 Lancaster Lens Co., 320-26 W. Main St., Lancaster, O. "Star."
 Lee Knight Lens Co., 210 East Ave., Rochester, N. Y.
 Legalite Corporation, 120 Boylston St., Boston, Mass.
 Lennon—See Faw Co.
 Lenslite—See Manufacturers Glass Co.
 Letts—See Cortland Auto Supply Co.
 Liberty—See Macbeth-Evans Glass Co.
 Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Long Way."
 Long Way—See Long Bros.
 McKee Glass Co., Jeannette, Pa.
 Macbeth-Evans Glass Co., Pittsburgh, Pa.
 Manufacturers Glass Co., 33 S. Dearborn St., Chicago, Ill. "Lenslite."
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Mel-O-Light—See Chicago Eye Shield Co.
 Merrill Co., Wm. C., Security Bldg., Milwaukee, Wis. (Sole Distributors for Rex Mfg. Co., Fond du Lac, Wis.) (See page 365.)
 Mock & Hardy, 111 W. Monroe St., Chicago, Ill. (Sole Distributors for Raylo Dimmer Co., Indianapolis, Ind.)
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 929.)

Monroe Auto Specialty Co., 203 State St., Rochester, N. Y. (Sole Distributors for L. L. L. D. Mfg. Co., Rochester, N. Y.)
 National—See Smith Glass Co.
 Nevablind Autolight Co., 47-51 Lispenard St., New York, N. Y.
 No-Glar—See Norling Rotary Engine Co.
 No-Glar-On Co., Stone St., Watertown, N. Y.
 No-Glare—See Perrin Mfg. Co.
 Nogiare Auto Lens Co., 148 Fifth St., Portland, Ore.
 Norling Rotary Engine Co., 155 N. Clark St., Chicago, Ill. "No Glar."
 North Star Mfg. Co., 6042-46 S. State St., Chicago, Ill.
 Northwestern Mirror & Specialty Co., 1225-29 S. Crawford Ave., Chicago, Ill. "Enemisco."
 Onlee—See Wickwire Spencer Steel Corp.
 Opto Lens Corp., 245 W. 55th St., New York, N. Y. (See page 333.)
 Osgood Lens & Supply Co., Harris Trust Bldg., Chicago, Ill.
 Parrish & Co., S. H., 202 S. Clark St., Chicago, Ill.
 Patton Glare Stop Corp., 1248 Broadway, Denver, Colo.
 Pennypacker Mfg. Co., 2206 Michigan Ave., Chicago, Ill. "Hed-Lite."
 Perrin Mfg. Co., 965 Woodward Ave., Detroit, Mich. "No-Glare."
 Pittsburgh Lamp, Brass & Glass Co., Liverpool & River Sts., Pittsburgh, Pa. "Kopp's."
 Preferred Utilities Co., 1780 Broadway, New York, N. Y. "Saf De Lite."
 Protection Auto Specialty Co., 1433 Fulton St., Brooklyn, N. Y.
 PUNCH—See Trieber Co.
 Rand Reflector Co., 191 Merrimack St., Haverhill, Mass.
 Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Glaroscope."
 Raydex Mfg. Co., Brackenridge, Pa.
 Raylo Dimmer Co.—See Mock & Hardy.
 Rex Mfg. Co.—See Merrill Co.
 Reynolds & Co., Harry H., 641 E. 39th St., Chicago, Ill. "Sof-Lite."
 Right—See Detroit Right Lens Co.
 Roadlighter—See Shaler Co.
 Roadwide—See Brown Reflector, Inc.
 Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon Nevablind."
 Romon Nevablind—See Roberts & Monroe.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)
 Saf De Lite—See Preferred Utilities Co.
 Saferlite Lens Co., 320 Fifth Ave., New York, N. Y. (See page 333.)
 Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.
 Safety-First—See American Mantle Co.
 Shaler Co., C. A., 903 Fourth St., Waukegan, Wis. "Roadlighter." (See pages 335, 939 and 965.)
 Sharco Autolamp Co., 230 E. Ohio St., Chicago, Ill.
 Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.
 Siraco-Hammond Co., Whitehall, N. Y. "Eureka-Lunette."
 Smith Glass Co., L. E., Mount Pleasant, Pa. "National," "Violet Ray."
 Sof-Lite—See Reynolds & Co.
 Sparta Mfg. Co., Grand Rapids, Mich. "Butterfly."
 Standard Corp., Outlook Bldg., Columbus, O. "Sun-Ray."

Everything is listed under the NOUN or principal word



SHALER PROVED BEST In Every Official State Test

Every state which makes official tests has awarded Shaler Roadlighters the highest candle power rating. *The Shaler is the only lens which has passed highest in every official state test.* It has been approved by states, cities and police—and is legal everywhere.

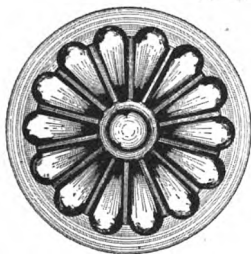
The Shaler does not dim, weaken or diffuse your driving light. It controls the "glare" rays by scientific prismatic refraction of the light, and distributes them on the road, where you need light.

Sizes $8\frac{1}{4}$ inch and smaller, price \$2.75 a pair.

Sizes $8\frac{3}{4}$ inch and larger, price \$3.50 a pair.

Dealers:—Write for Free Trial Demonstration Offer and Free Book, "Making Light of Glare"

C. A. SHALER CO., 903 Fourth St., Waupun, Wis., U. S. A.



All of the Light

None of the Glare

Jobbers & Dealers

At last you have an opportunity to cash in on the demand for a lens that is guaranteed to kill all of the glare and none of the light.

FILMOLENS

is not made of glass—won't break—lasts as long as the car.

Write today for our special proposition.

Retail Price \$1.75 per Pair

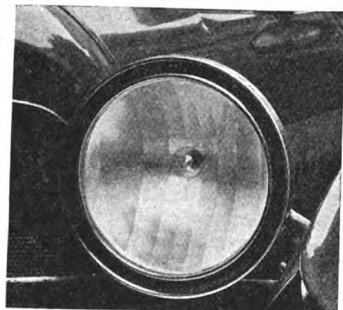
Our money back guarantee covers Jobber, Dealer, Consumer alike.

FILMOLENS SALES CO.

1926 Ford Bldg., Detroit, Mich.

BROWN REFLECTORS

"All The Light on The Road"
and
"The Whole Road Lighted"



The object in the development of the BROWN REFLECTOR has been to produce, by the most efficient means possible, a light of extreme width and uniform daylight quality, at the same time to so direct it that all rays shall be at or below the horizontal.

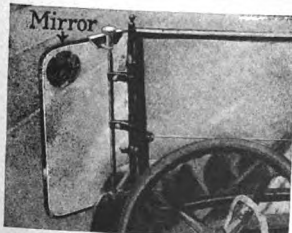
The light obtained from the use of BROWN REFLECTORS not only fulfills the requirements of the law as to distance and absence of glare, but has, in addition, a side light of such brilliancy that the gutter, sidewalk and fence are clearly lighted on the darkest night.

This feature has earned for the BROWN REFLECTOR the name "Roadwide Light." It is hardly necessary to point out the importance of this feature. Behind "THE ROADWIDE LIGHT," the driver is sure of his ground. In winding the curves on a country road, he experiences no uncertainty, because he "sees around the curve." The strong glare from the approaching car does not disturb him, as the gutter is thoroughly lighted. Even the man stepping from the sidewalk cannot surprise him.

BROWN REFLECTOR, Inc.

25 Jersey Street

Boston, Mass.



BENZER REAR VIEW WINDEFLECTORS

THEY SELL ON SIGHT

Get the exclusive Sales Agency for Benzer Rear View Winddeflectors—the only wind deflectors made with rear view mirrors ground into the glass. Large stock not needed to secure exclusive agency. Benzer "Winddeflectors" sell on sight and net big profits.

BENZER LENS

Legal in Every State

Provides a GLARELESS HEADLIGHT. Shows up every road irregularity, clear and distinct. Gives a magnified side projection, revealing dangerous ditches and ruts. The SAFEST Lens made. Passed highest in candle power tests in every state.

THE BENZER CORPORATION
Myrtle, Cooper and Webster Aves., Brooklyn, N. Y.



Good profit and advertising support.
Write or wire for full details of our Distributors' proposition.

Please mention The Automobile Trade Directory

DIMMERS or SHADES, Headlight (Continued)

Star—See Lancaster Lens Co.
Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)
Stryker Deflector Co., 78 W. Chippewa St., Buffalo, N. Y.
Suess Glass Co., Eighth & Virginia Sts., Seattle, Wash.
Sun-Ray—See Standard Corp.
Sunlite Co., McKinney, Texas.
Superb Lens Co., 1819 Washington Ave., N., Minneapolis, Minn.
Thoma & Son, Fairfield, Iowa.
Thula—See Kamp Auto Supply Co.
Thumb Accessory Co., Sebawaing, Mich. "Us-ur-Thum."
Tobey, Wm. L., 9 Lewis St. (E. Boston), Boston, Mass.
Torrance Glass Co.—See Atlas Trading & Navigation Co.
Triebler Co., Benj., 4637 Broadway, Chicago, Ill. "Punch."
Us-ur-Thum—See Thumb Accessory Co.
Unique Auto Specialties Co., 280 Golden Gate Ave., San Francisco, Cal.
United States Glass Co., Pittsburgh, Pa.
Utility Mfg. & Sales Corp., 262-80 Dover St., Boston, Mass.
Violet Ray—See Smith Glass Co.
Warner-Patterson Co., 914 S. Michigan Ave., Chicago, Ill. (See page 333.)
Wickwire Spencer Steel Corp., Worcester, Mass. "Onlee." (See page 794.)
Wilson, R. F., Foster Bldg., Denver, Colo.
Wing Co., St. Cloud, Minn.

DIMMERS or SHADES, Headlight for Fords

(Diffusing and deflecting lenses or glasses, special shades and reflectors, hoods and screens, two filament bulbs, etc.—See also Reparaturs, Headlight)

A-K—See Angsten-Kox Co.
Amesbury Bent Glass Co., Amesbury, Mass.
Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."
Boko—See Defiance Welding Co.
Burgess Mfg. Co., Walter S., 500 Pleasant St., St. Joseph, Mich. "Burgiswitch." (See page 765.)
Burgiswitch—See Burgess Mfg. Co.
Defiance Welding Co., Defiance Bldg., Defiance, O. "Boko."
Dim-Ur-Lite—See Toledo Cable Co.
Doe Battery & Novelty Co., E. Water St., Kent, O.
4-A Products Co., 3103 Downing St., Denver, Colo.
Han-D-Dim Co., 1645 W. 100th Pl., Chicago, Ill.
Hart & Co., Randolph, Mass.
Hed-Lite—See Pennypacker Mfg. Co.
Kamp Auto Supply Co., 707 Second Ave., S. Minneapolis, Minn.
L. L. D. Mfg. Co.—See Monroe Auto Specialty Co.
Lenslite—See Manufacturers Glass Co.
Manufacturers Glass Co., 38 S. Dearborn St., Chicago, Ill. "Lenslite."
Merrill Co., Wm. C., Security Bldg., Milwaukee, Wis. (Sole Distributors for Rex Mfg. Co., Fond du Lac, Wis.) (See page 365.)
Monroe Auto Specialty Co., 203 State St., Rochester, N. Y. (Sole Distributors for L. L. D. Mfg. Co., Rochester, N. Y.)
Onlee—See Wickwire Spencer Steel Corp.
Only Grease Gun Co., Newton, Ia.
Pennypacker Mfg. Co., 2206 Michigan Ave., Chicago, Ill. "Hed-Lite."

Rex Mfg. Co.—See Merrill Co.
Superb Lens Co., 1219 Washington Ave. N., Minneapolis, Minn.
Thula—See Kamp Auto Supply Co.
Toledo Cable Co., 1685 Grand Ave., Toledo, O. "Dim-Ur-Lite."
Wickwire Spencer Steel Corp., Worcester, Mass. "Onlee." (See page 794.)

DIRECTION INDICATING SIGNALS—See Signals, Direction Indicating or Traffic

DISC GRINDERS—See Grinders, Disc

DISC WHEEL TIRE CONNECTIONS—See Connections, Disc Wheel Tire

DISC WHEEL TIRE INFLATORS—See Connections, Disc Wheel Tire

DISC WHEELS—See Wheels, Pressed & Wrought Steel

DISC WHEELS, METAL—See Wheels, Metal Disc

DISC WHEELS, WOOD—See Wheels, Wood Disc

DISCS, CLUTCH—See Discs, Steel Clutch

DISCS, FABRIC CLUTCH—See Lining, Brake

DISCS, FRICTION—See Frictions, Fiber

DISCS, Steel Clutch

Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O.
Bossert Corp., Utica, N. Y.
Buffalo Pressed Steel Co., Buffalo, N. Y.
Crosby Co., Buffalo, N. Y. (See page 813.)
Curtis Clutch Disc Co., 1646 Kienlen Ave., St. Louis, Mo. (See page 337.)
Diston & Sons, Henry (Tacony), Philadelphia, Pa.
Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O.
Kongislow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
Moltrup Steel Products Co., Beaver Falls, Pa. (See page 821.)
Oakes Co., Indianapolis, Ind. (See page 369.)
Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa.
Simonds Mfg. Co., 470 Main St., Fitchburg, Mass.
United & Globe Rubber Co., Prospect & Frazer Sts., Trenton, N. J.
Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)

DISCS, Universal Joint

(Flexible Fabric Discs)

Anchor Packing Co., 72 Murray St., New York, N. Y. "Anchorite."
Anchorite—See Anchor Packing Co.
Continental Rubber Works, 1903 Liberty St., Erie, Pa. "Vitalic."
Thermoid Rubber Co., Trenton, N. J. (See page 531.)
Vitalic—See Continental Rubber Works.

DISCS, RADIATOR—See Discs or Fins, Radiator

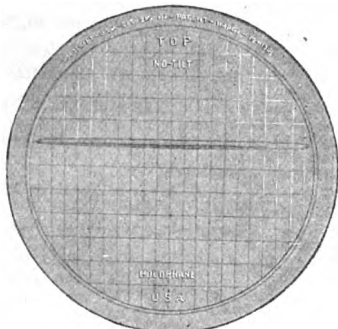
DISCS or FINS, Radiator

Crosby Co., Buffalo, N. Y. (See page 813.)

Everything is listed under the NOUN or principal word

Glareless Light

UNIVERSAL APPROVAL



The HOLOPHANE LENS with the FIN No. 855 produces intense road light but does not give the slightest discomfort to the approaching driver. This new HOLOPHANE LENS has been designed with special reference to meeting the spirit as well as the letter of the definite specifications formulated by the Illuminating Engineering Society which is rapidly becoming the basis of state headlight regulations throughout the country.

HOLOPHANE GLASS CO.
342 Madison Ave., New York City

Bausch & Lomb

AUTOMOBILE LENS

An Optical Product for an Optical Purpose

Designed by scientists of long experience to give maximum illumination on the road—where the laws require it and drivers need it. Light optically controlled—no glare and no waste. Legal everywhere.

*To demonstrate is to sell it.
Write for circular and terms.*

Bausch & Lomb Optical Co.

New York, Washington, San Francisco,
Chicago Rochester, N. Y. London

Leading American Makers of High-Grade Optical Instruments and Lenses

CURTIS CLUTCH DISCS



CURTIS Steel Clutch Discs are furnished in high carbon or soft steel, plain or slotted, flat or formed, unfinished or ground and polished, tempered or untempered—any size.

CURTIS CLUTCH DISC CO.
1646 Kienlen Ave.
St. Louis, Missouri

OUR



Products have firmly established for us a reputation in the *Battery and Automotive Electrical* field.

We carry a most complete line of parts and accessories for all makes of storage batteries and electrical systems.

Complete equipment for battery and electrical service stations.

Catalogue Describing Our Line Will Be
Sent Upon Request

AUTOMOTIVE ELECTRICAL SALES CO.

2637 S. Michigan Avenue
CHICAGO, ILLINOIS

DISCS, Wheel

Adco—See American Automatic Devices Co.
 American Automatic Devices Co., Chicago, Ill. "Adco." (See page 251.)
 Gal-Lau Steel Disc Co., 702 Market St., San Francisco, Cal.
 Lack Mfg. Co., 1200 S. Third St., Paducah, Ky.
 Lake Erie Accessories Co., 1212-50 W. Sixth St., Cleveland, O. "Simmons."
 Lebanon Gear & Machine Works, 1440 Forge St., Lebanon, Pa.
 Resilient Safewheel Co., 1829 Cypress St., Oakland, Cal. "Safewheel."
 Safewheel—See Resilient Safewheel Co.
 Schutte Body Co., Charles, 137 E. Marion St., Lancaster, Pa.
 Simmons—See Lake Erie Accessories Co.

DISCS, Wheel for Fords

Adco—See American Automatic Devices Co.
 American Automatic Devices Co., Chicago, Ill. "Adco." (See page 251.)
 Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O. "Peerless."
 Empire Auto Specialty Co., 1426 Blue Island Ave., Chicago, Ill.
 Peerless—See Corcoran Mfg. Co.
 Resilient Safewheel Co., 1829 Cypress St., Oakland, Cal. "Safewheel."
 Safewheel—See Resilient Safewheel Co.

DISENGAGING TRACTOR HITCHES, AUTOMATIC—See Hitches, Automatic Disengaging Tractor**DISPENSERS, GREASE—See Guns, Portable Garage Grease****DISTANCE RECORDING METERS—See Meters, Distance Recording****DISTANCE RODS FOR FORDS—See Rods, Radius****DISTILLED WATER—See Water, Distilled****DISTRIBUTOR PARTS—See Parts, Magneto, Coil and Distributor****DISTRIBUTOR WRENCHES—See Wrenches, Magneto and Distributor****DISTRIBUTORS, SPARK—See Timers, Ignition; also Magnetos; also Systems, Battery Ignition; also Starters, Electric.****DIVIDERS AND CALIPERS—See Calipers and Dividers****DOGS, Lathe**

Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill.
 (See page 885.)
 Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
 Bonney Forge & Tool Works, Allentown, Pa. "Indispensable."
 Collmer Bros., 107-11 Lincoln Way, E., South Bend, Ind. "Le Count."
 Efficiency Device Corp., 198 Eighth St., Long Island City, N. Y.

Indispensable—See Bonney Forge & Tool Works.**Le Count—See Collmer Bros.****Le Count, Wm. G., Merritt St., South Norwalk, Conn.****Lutz-Webster Engineering Co., 31st St. & Grays Ferry Rd., Philadelphia, Pa.****Mark Mfg. Co., 111 W. Washington St., Chicago, Ill.****O. K. Tool Holder Co., Shelton, Conn.****Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.****Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.****Ready Tool Co., 624 Iranistan Ave., Bridgeport, Conn. "Red-E."****Red-E—See Ready Tool Co.****Union Tool Co., 48 E. River St., Orange, Mass.****Vulcan—See Williams & Co.****West Steel Casting Co., 305-41 E. 70th St., Cleveland, O.****Western Tool & Mfg. Co., Springfield, O.****Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. "Vulcan."**

(See page 963.)

DOMELIGHTS—See Lights, Electric Dome**DOOR ANTI-RATTLERS—See Anti-Rattlers, Door****DOOR BUMPERS—See Anti-Rattlers, Door****DOOR CURTAIN FITTINGS—See Openers, Curtain****DOOR HANDLES—See Handles, Door****DOOR HANGERS—See Hangers and Hinges, Garage Door****DOOR HINGES—See Hinges, Door; also Hangers and Hinges, Garage Door****DOOR HOLDERS—See Holders, Garage Door****DOOR LATCH EXTENSIONS FOR FORDS—See Extensions, Door Latch****DOOR LOCKS—See Locks, Door****DOOR OPENERS—See Holders, Garage Door; also Openers, Electric Garage Door****DOOR POCKETS FOR FORDS—See Pockets, Door****DOOR PROTECTORS—See Protectors, Door****DOORS, Special Garage**

(For special garage door hangers, hinges and holders—See Hangers, Garage Door; also Holders and Openers, Garage Door; also Openers, Electric Garage Door)

Almetl—See Merchant & Evans Co.**Cornell Iron Works, 601 W. 26th St., New York, N. Y.****Eslien Sheet Metal Works, 999-1001 30th St., Milwaukee, Wis.****Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "Almetl."****Right Angle Garage Door Co., 2809 Geary St., San Francisco, Cal.****St. Louis Fire Door Co., 1512 Clark Ave., St. Louis, Mo.**

Everything is listed under the NOUN or principal word

DOPE INJECTORS—See Guns, Grease**DOUBLE TREAD TIRE STITCHING MACHINES—See Machines, Double Tread Tire Stitching****DRAG LINKS—See Connections, Steering****DRAG LINKS FOR FORDS—See Links, Steering****DRAGS, TRUCK WHEEL REMOVING—See Cranes, Drags and Jacks, Truck Wheel Removing****DRESSERS, Emery Wheel**

Baldwin, Tuthill & Bolton, 465-505 Sixth St., Grand Rapids, Mich.

Bandier & Sons, Bernard, 3 W. 49th St., New York, N. Y.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Calder, Geo. H., 633 N. Prince St., Lancaster, Pa.

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. "Huntington." (See page 735.)

Clibbe Bros. Mfg. Co., W. Harrison St., Plymouth, Ind. "Imperial."

Collmer Bros., 107-11 Lincoln Way, E., South Bend, Ind. "Huntington."

Crackerjack—See Steele Co.

Crafts, Arthur A., 125 Summer St., Boston, Mass.

Desmond-Stephan Mfg. Co., Urbana, O.

Diamond Saw & Stamping Works, 357-61 Seventh St., Buffalo, N. Y. "Sterling."

Diamond Tool Co., 326 W. Madison St., Chicago, Ill.

Diamond Tool & Die Co., 438 Asylum St., Hartford, Conn.

Federal Machine Products Co., 6442 Farnsworth St., Detroit, Mich.

H. P. Co., Midland, Mich.

Huntington—See Chicago Screw Co.

Huntington—See Collmer Screw Co.

Huntington—See Mark Mfg. Co.

Imperial—See Clibbe Bros. Mfg. Co.

Mark Mfg. Co., 111 W. Washington St., Chicago, Ill. "Huntington."

Meyers Co., W. F., 13th & J. Sts., Bedford, Ind.

North Wales Machine Co., Elm Ave. & Center St., North Wales, Pa.

Peninsula Emery Wheel Co., Detroit, Mich.

Reed Mfg. Co., W. Eighth St., Erie, Pa.

Ross Mfg. Co., 3160 W. 166th St., Cleveland, O.

Standard Tool Co., 6900-34 Central Ave., Cleveland, O.

Steele Co., W. M., 98-100 Beacon St., Worcester, Mass. "Crackerjack."

Sterling—See Diamond Saw & Stamping Works.

Sterling Grinding Wheel Co., Tiffin, O. (See page 959.)

Tanite Co., Stroudsburg, Pa.

Vincent Steel Process Co., 3131 Bellevue Ave., Detroit, Mich.

Warren Axe & Tool Co., Warren, Pa.

Western Tool & Mfg. Co., Springfield, O.

Wheel Truing Tool Co., Penobscot Bldg., Detroit, Mich.

Wrigley Co., Thomas, 500 S. Sherman St., Chicago, Ill.

DRESSING, BELT—See Dressing, Clutch**DRESSING, Brake**

Brak-rite Mfg. Co., 176 Division St., Amsterdam, N. Y.

Hoagland Co., C. W., 40 Court St., Boston, Mass. "Holdfast."

Holdfast—See Hoagland Co.

Spoco Oil Co., 818 Larimer St., Denver, Colo.

DRESSING, CELLULOID—See Cleaners, Celluloid**DRESSING, Clutch and Belt**

(For leather faced clutches and leather fan belts)

All-in-One—See Durkee-Atwood Co.

Armiger Chemical Co., 3155 W. Austin Ave., Chicago, Ill. "Rex."

Automotive Appliance Co., 136 E. Spring St., Columbus, O. "Fosco."

Blue Ribbon—See Jobbers' Mfg. Co.

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Camo—See Perkins-Campbell Co.

Clark's Chemical Laboratories, Dr., 5401 Ingleside Ave., Chicago, Ill.

Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)

Cook, Geo. E., 360 Amsterdam Ave., New York, N. Y.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie." "All-in-One."

E-Fec-Tiv—See Permatite Mfg. Co.

Ensign Refining Co., 16703 Quebec Ave., Cleveland, O.

Fosco—See Automotive Appliance Co.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 655.)

Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whiz."

Hunt Co., Henry C., 261 Franklin St., Boston, Mass.

I. C. U.—See Livingston Co.

Instant Products Co., 21 Cambria St., Boston, Mass.

Jewell Belting Co., 55 Trumbull St., Hartford, Conn.

Jobbers' Mfg. Co., 337 S. La Salle St., Chicago, Ill. "Blue Ribbon."

Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."

Miown—See Whitlock Mfg. Co.

Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.

No Chatter—See Speyer Mfg. Co.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)

Norwesco—See Northwestern Chemical Co.

Peerless—See Columbus Varnish Co.

Perkins-Campbell Co., Cincinnati, O. "Camo." (See page 269.)

Permatex Co., Sheepshead Bay, N. Y. (See page 277.)

Permatite Mfg. Co., 21 Fifth St., Minneapolis, Minn. "E-Fec-Tiv."

Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rex—See Armiger Chemical Co.

Rhoads & Son, J. E., 12 N. Third St., Philadelphia, Pa.

Rie-Nie—See Durkee-Atwood Co.

Seal Oil—See Whitlock Mfg. Co.

Sek Mfg. Co., 4301 W. Kinzie St., Chicago, Ill.

Everything is listed under the NOUN or principal word

DRESSING, Clutch and Belt (Continued)

Speyer Mfg. Co., 53 Hope St., Brooklyn, N. Y.
 "No Chatter."
 Thomson Auto Specialties Co., 80-90 W.
 Spring St., Columbus, O.
 Uno Mfg. Co., 6433 Ravenswood Ave., Chicago,
 Ill.
 Velvetone—See Whitlock Mfg. Co.
 Whiz—See Hollingshead Co.
 Whitlock Mfg. Co., 1506 W. 112th St., N. W.,
 Cleveland, O. "Seal Oil," "Miown," "Vel-
 vetone."
 Wonder Worker—See Hall-Thompson Co

DRESSING, Leather

(For refinishing leather tops or upholstery)

Acme White Lead & Color Works, 8250 St.
 Aubin Ave., Detroit, Mich.
 Ajaco—See Alsdorf Corp.
 All-in-One—See Durkee-Atwood Co.
 Alsdorf Corp., A. J., 404 S. Wells St., Chicago,
 Ill. "Ajaco."
 American Lacquer Co., Bruce Ave., Bridge-
 port, Conn.
 American Paint Products Co., 810 S. Morgan
 St., Chicago, Ill.
 Arco Co., Euclid Ave. & E. 65th St., Cleveland,
 O.
 Armiger Chemical Co., 2155 W. Austin Ave.,
 Chicago, Ill. "Rex."
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y.
 "Shkup."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill.
 "Century."
 Aut-O-Sek—See Sek Mfg. Co.
 Auto Products Mfg. Co., Buffalo, N. Y. "Rub-
 R-Tite," "Leath-R-Like," "Col-R-Old,"
 "Non-Gloss," "Col-R-Drab."
 Auto Specialties Mfg. Co., Buffalo, N. Y.
 "Knu-Lack," "Dull Lac," "Re-Knu."
 (See page 343.)
 Autonamel Co., 94-97 St. Paul St., Rochester,
 N. Y.
 Baum's Gasoline Co., 104 N. George St.,
 Rome, N. Y.
 Be-Be-Co.—See Boston Blacking Co.
 Bergh Specialty Co., 1433 McCadden Pl., Los
 Angeles, Cal.
 Bilchaco—See Billings-Chapin Co.
 Billings-Chapin Co., 1163 E. 40th St., Cleveland,
 O. "Bilchaco," "Oughto."
 Black-Lak—See Johnson & Son.
 Blood & Co., T. L., 413 Wacouts St., St. Paul,
 Minn.
 Blue Ribbon—See International Metal Polish
 Co.
 Boston Blacking Co., Third & Potter Sts.,
 Cambridge, Mass. "Be-Be-Co."
 Boyer Chemical Laboratory, 940 N. Clark St.,
 Chicago, Ill.
 Bradley & Vrooman Co., 2629 Dearborn St.,
 Chicago, Ill.
 Bulls-Eye—See Zinsser & Co.
 Butler-Harley Co., 33rd & Master Sts., Phil-
 adelphia, Pa. "Harco."
 Century—See Arnstein, Eugene.
 Certain-teed Products Corp., Boatmans Bank
 Bldg., St. Louis, Mo.
 Col-R-Drab—See Auto Products Mfg. Co.
 Col-R-Old—See Auto Products Mfg. Co.
 Columbus Varnish Co., Columbus, O.
 (See page 341.)
 Conco—See Conewango Chemical Co.

Conewango Chemical Co., Warren, Pa.
 "Conco."
 Day & Co., James B., 224-26 W. Superior St.,
 Chicago, Ill. "Leatherlife."
 Dealers Motor Supply Corp., Second National
 Bank Bldg., Uniontown, Pa.
 Detroit White Lead Works, 1980 Milwaukee
 Ave., E., Detroit, Mich. "Rogers."
 Dibble Color Co., 129 Larned St., W., Detroit,
 Mich.
 Dielectric Mfg. Co., 224 S. Vandeventer Ave.,
 St. Louis, Mo.
 Dix Mfg. Co., Lewistown, Pa.
 Dull-Lac—See Auto Specialties Mfg. Co.
 du Pont de Nemours & Co., E. I. (Paint &
 Varnish Division), Wilmington, Del.
 Durkee-Atwood Co., 40 Wilder St., Minne-
 apolis, Minn. "Rie-Nie," "All-in-One."
 Dutch—See Van Cleef Bros.
 E-Fec-Tiv—See Permatite Mfg. Co.
 Ebersson-Lindsley Paint Co., 1830-32 Morgan
 St., St. Louis, Mo. "Leather-Lac."
 Effecto—See Pratt & Lambert.
 Evernew—See Felton, Sibley & Co.
 F-S.—See Felton, Sibley & Co.
 Felton, Sibley & Co., 126-40 N. Fourth St.,
 Philadelphia, Pa. "Evernew," "F-S."
 Flebing Chemical Co., 238-40 Reed St., Mil-
 waukee, Wis.
 Flexo—See Rodriguez, R. E.
 Glidden Sales Co., 573-75 Forest Ave., Buffalo,
 N. Y. "Koto."
 Go-Co Compound Co., 206 E. 67th St., New
 York, N. Y.
 Hall-Thompson Co., Dept. A., Hartford,
 Conn. "Wonder Worker," "Quad-Lac."
 (See page 655.)
 Harco—See Butler-Harley Co.
 Hardy Paint & Varnish Co., Oakwood & M.
 C. R. R., Toledo, O.
 Hawthay & Sons, C. L., 346 Congress St.,
 Boston, Mass.
 Hollingshead Co., R. M., 112 N. Ninth St.,
 Camden, N. J. "Whiz."
 I. C. U.—See Livingston Co.
 International Metal Polish Co., Quill St. &
 Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Jewell—See Wadsworth-Howland Co.
 Johnson & Son, S. C., 1012 16th St., Racine,
 Wis. "Black-Lak."
 Johnston Paint Co., R. F., Pearl & Main
 Sts., Cincinnati, O. "Leather Lac," "Top
 Fix."
 Kellerman, I., 674 Ninth Ave., New York, N. Y.
 Kneutop—See Western Reserve Varnish Co.
 Knu-Lack—See Auto Specialties Mfg. Co.
 Koto—See Glidden Sales Co.
 Lawrence & Co., W. W., Pittsburgh, Pa.
 Leather-Lac—See Ebersson-Lindsley Paint Co.
 Leather Lac—See Johnston Paint Co.
 Leatherlife—See Day & Co.
 Leath-R-Like—See Auto Products Mfg. Co.
 Leath-R-Nu—See Nu-Back Mfg. Co.
 Liberty Chemical Works, Chicago, Ill.
 (See page 783.)
 Livingston Co., 161 Day St., New Haven,
 Conn. "I. C. U."
 Lowe Mfg. Co., J. H., Auburn Rd., Seneca
 Falls, N. Y. "Owl."
 Lucas & Co., John, 322-30 Race St., Phila-
 delphia, Pa.
 McDougall-Butler Co., 6 Evans St., Buffalo,
 N. Y.
 Makmer—See Wadsworth, Howland Co.

Everything is listed under the NOUN or principal word

PEERLESS

Automobile

Makes old cars look like new

A different product for each part to make all used cars look as good as possible.



Specialties

Quality goods sold in lithographed cans. Complete directions on back of each can.

Peerless Mohair Top Dressing

Waterproofs, dresses and dyes mohair, cloth and curtains top and curtains like new. Dries over night, leaving tops soft and pliable. About one quart to dress a five-passenger car top.

Pint, 90c; Quart, \$1.65

Peerless Leather Top Dressing

An oil dressing to renew the finish, and keep rubber, leather and pantanote tops and curtains soft and pliable. Dries over night. Not for seats or cushions.

About one quart to dress large five-passenger top and curtains. Pint, 90c; Quart, \$1.65

Peerless Ford Top Dressing

A dressing made for Ford top material, making a rich black gloss finish, adding life and color to old tops. Dries over night, wears indefinitely.

About one pint for a runabout top; one quart for a touring car top.

Pint, 90c; Quart, \$1.65

Peerless Cushion Dressing

Without danger of washing or rubbing off, it brightens and renews the finish of leather seats and cushions. Dries in thirty minutes.

About one pint for small car and one quart for large car.

Pint, 90c; Quart, \$1.65

Peerless Lamp Enamel—Gloss and Dull

A rich finish for brass, nickel or iron.

One coat covers solid over the metal or old enamel. Air drying over night.

Pint, 90c; Quart, \$1.65

Peerless Cylinder Enamel—Black and Gray

A rich gloss enamel that saves cylinders and all metal engine parts from rusting. Not injured by heat, grease or gasoline. Air drying over night.

Pint, 90c; Quart, \$1.65

Peerless Tire Paint

A white waterproof coating for tires containing nothing injurious to rubber and keeps tires looking bright and new. One pint will cover five regular casings.

Pint, 90c; Quart, \$1.65

Peerless Liquid Wax

A wax polish for all varnished surfaces of automobiles. In liquid form so that it is easily applied in a light even coat. Polished with ease and ready for use at once. Does not collect dust, and is not injured by water.

One pint will polish a large car. Pint, 90c; Quart, \$1.65

Peerless Auto Body Polish

A varnish food to brighten and renew the appearance of all varnished surfaces on an automobile. Applied and polished ready for use in a very few minutes.

About one pint will polish a car. Pint, 90c; Quart, \$1.65

Peerless Battery Box Black—Acid-Proof

An acid-proof coating for wood and metal that comes in contact with acid and fumes from batteries. Keeps acid from destroying wood and metal.

Pint, 90c; Quart, \$1.65

Peerless Color Finishing Varnishes

The idea of an owner wanting to paint the body, wheels or chassis of his automobile his favorite color is now realized by the use of these products. The work can be done at home. The goods will cover solid with one coat and dry satisfactory over night. Very durable products. Made in eight colors.

Straw Color		
Medium Yellow		
Red	Quart,	
Royal Auto Blue		\$1.90
Gray		
Brewster Green		
Black		
White		

Pint,
\$1.00

Peerless Black Japan—Extra Fine

A rich gloss air drying enamel for touch-up and all-around use on wood and metal parts of automobiles. One coat covers solid and dries over night.

Pint, 90c; Quart, \$1.65

Peerless Fender Japan—Jet Black

Made especially for coating fenders and hoods with a rich black gloss enamel. Air dries and has a finish like a baked job. Dries in twenty-four to thirty-six hours.

About one quart to coat fenders of a small car.

Pint, 90c; Quart, \$1.65

Peerless Mirroroid

A varnish renewer to be applied to varnished surfaces that have lost their lustre and become dull through use. Dries over night with a fine lustre that will wear for months.

One pint to one quart to finish an automobile.

Pint, 90c; Quart, \$1.65

Peerless Gasket Shellac

A strictly high grade shellac for gasket, cork carburetor floats, and such parts on an automobile. This is a high grade product cut in pure alcohol. Is not affected by gasoline.

1/4 Pt., 40c; 1 Pt., 75c;
1 Qt., \$1.85; 2 Os. Bot., 20c

Peerless Lining Dye

A powerful black dye that dyes all cloth lining a black uniform color over stains and faded parts alike. Dries in two to three hours.

About one quart to dye inside of five-passenger car top.

Pint, 90c; Quart, \$1.65

Peerless Rim Paint—Anti-Rust

A protective coating for automobile rims, to allow tires to be removed with ease and keep rims from rusting. Dries in four to five hours.

About one pint for rims of a small car.

Pint, 90c; Quart, \$1.65

Used throughout the world by owners, garages and chauffeurs. Also used by over 8000 particular automobile painters.

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For your special convenience we have listed our complete line so that at all times you will have our catalogue before you with dealer, garage, hardware store, and paint shop discount of 33 1/3% from list prices. Ask your jobber or write us for latest catalogue, also window display material and other selling helps.

Made and sold on a quality basis only by,

The Columbus Varnish Co.
Sole Makers Columbus, O., U.S.A.

Please mention The Automobile Trade Directory

DRESSING, Leather (Continued)

Mansfield Mfg. Corp., 323 S. Clinton St., Syracuse, N. Y.
Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
Mat's—See Weiss Polish Works.
Mechem, J. L., 113 E. Jackson St., Centerville, Ia.
Mengo Products Co., 537 Rosedale St., (Wilkinsburg) Pittsburgh, Pa.
Mid West Co., 30 Ionia Ave., S. W., Grand Rapids, Mich.
Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.
Miller Oil Products Corp., Bloomfield, N. J.
Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
Montgomery-Washburn Co., Saugerties, N. Y.
Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
National Chemical Co., Canal Fulton, O. "Quick-Seal."
Non-Gloss—See Auto Products Mfg. Co.
Northwestern Chemical Co., 785 State St., Marietta, O. "Norweseco." (See page 275.)
Norweseco—See Northwestern Chemical Co.
Nu-Back Mfg. Co., 213-15 E. Second St., St. Louis, Mo. "Leath-R-Nu."
NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
Nutop—See Oriental Compound Co.
O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
On-E-Z—See Sutorius Auto Top Co.
One-Cote—See U-co Mfg. Co.
Oriental Compound Co., 306 W. Lancaster Ave., Ardmore, Pa. "Nutop."
Oughto—See Billings-Chapin Co.
Outlook Co., 5518 Euclid Ave., Cleveland, O.
Owl—See Lowe Mfg. Co.
Peerless—See Columbus Varnish Co.
Permatex Co., Sheephead Bay, N. Y. (See page 277.)
Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fac-Tiv."
Pimbley Paint & Glass Co., 213 S. Sixth St., St. Joseph, Mo. "Top-Newer."
Pioneer—See Northwestern Chemical Co.
Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Effects."
Preservo—See Robeson Preservo Co.
Quad-Lac—See Hall-Thompson Co.
Quick-Seal—See National Chemical Co.
Quickwork—See Standard Varnish Works.
Rainoll—See Waterproof Oil Products Co.
Re-Knu—See Auto Specialties Mfg. Co.
Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo.
Rex—See Armiger Chemical Co.
Ris-Nie—See Durkee-Atwood Co.
Robeson Preservo Co., White Bldg., Port Huron, Mich. "Preservo."
Rodriguez, R. E., 55-58 Warren St., New York, N. Y. "Flexo."
Rogers—See Detroit White Lead Works.
Rub-R-Tite—See Auto Products Mfg. Co.
St. Louis Rubber Cement Co., 3946 Lambda Ave., St. Louis, Mo.
Sek Mfg. Co., 4301 W. Kinzie St., Chicago, Ill. "Aut-O-Sek."
Simons Mfg. Co., 2131 Michigan Ave., Chicago, Ill.
Silkup—See Arnold, N. B.

Standard Varnish Works, 88 West St., New York, N. Y. "Quickwork."
Sterno Corp., New York, N. Y. (See page 269.)
Super-Glos Mfg. Co., 1091 Mission St., San Francisco, Cal. "Top-Nu."
Sutorius Auto Top Co., 621-23 Third Ave., S., Minneapolis, Minn. "On-E-Z."
Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
Thumb, E. W., 373 Orleans St., Chicago, Ill.
Top Fix—See Johnston Paint Co.
Top-Newer—See Pimbley Paint & Glass Co.
Top-Nu—See Super-Glos Mfg. Co.
Top Tite—See Woodtite Laboratories.
Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn.
Twin City Varnish Co., 203 N. Wabash Ave., Chicago, Ill. "Twincoco."
Twincoco—See Twin City Varnish Co.
U-co Mfg. Co., 110 West 43d St., New York, N. Y. "One-Cote."
Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill.
U-Sav-Your Mfg. Co., 12 Perkins Ave., Warren, Mass.
Van Cleaf Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
Var-Namel Co., Brooklyn, N. Y.
Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewell."
Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Makmer."
Waterproof Oil Products Co., 1717 Westlake, N. Seattle, Wash. "Rainoll."
Weiss Polish Works, 216 S. Winchester Ave., Chicago, Ill. "Mat's."
Western Reserve Varnish Co., Cleveland, O. "Kneutop."
West's Sons, L. M., 230 Broadway, Rockford, Ill.
Whiz—See Hollingshead Co.
Wonder Worker—See Hall-Thompson Co.
Woodtite Laboratories, Modesto, Cal. "Top Tite."
Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

DRESSING MACHINES—See Machines, Top Bow Dressing**DRESSING, Mohair Top**

(For cleaning and renovating mohair tops, slip covers or upholstery)

Acme White Lead & Color Works, 3250 St. Aubin Ave., Detroit, Mich. "Neale."
Ad-el-ite—See Adams & Elting Co.
Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)
Ajaco—See Alsford Corp.
All-in-One—See Durkee-Atwood Co.
Alsford Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."
American Chemical & Mfg. Co., 617 Monticello Ave., Norfolk, Va. "Hippo."
American Paint Products Co., 810 S. Morgan St., Chicago, Ill.
Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.
Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Slikup."
Aut-O-Sek—See Sek Mfg. Co.
Auto Specialties Mfg. Co., Buffalo, N. Y. "Dull-Lac." (See page 343.)
Be-Be Co.—See Boston Blacking Co.
Baum's Castorine Co., 104 N. George St., Rome, N. Y.

Everything is listed under the NOUN or principal word



"Guaranty Plan" Banking

is the logical method of handling Automobile and Truck credit sales. It consists of:

A Credit Service that protects dealer's interests—

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Quality **BEATS ALL** Brand

Incorporated into the base of Beats-All Top Dressings is a **LIQUID RUBBER** which guarantees their Weather-proof and Re-rubberizing qualities. Gives the old top that new factory appearance and durability. Adapted for any top.

Mohair Top Dressing.....	Pts., \$0.85:	Qts., \$1.60
Dull-Lac Top Dressing.....	Pts., .90:	Qts., 1.85
Kau-Lac Ford Top Dressing.....	Pts., .85:	Qts., 1.60
Re-Kau Upholstery Dressing—		
Black	Pts., .90:	Qts., 1.85
Brown	Pts., 1.00:	Qts., 1.85
Re-Kau Black Lining Dye—		
(Concentrated)	Pts., 1.80:	Qts., 2.75
Drab Lining Dye	Pts., 1.50:	Qts., 2.75
Gloss Black Enamel	Pts., .90:	Qts., 1.65
Stay-On Auto Top Patches.....	\$6.00 per dozen	
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17 More Auto Economy Products

Send for descriptive catalog and our liberal discounts to the trade.

Auto Specialties Mfg. Co., Inc.
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Automotive Specialties

Ignition & Lighting Switches
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Cowl Lamps Sockets
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BRIGGS & STRATTON CO.
MILWAUKEE, WIS.

THE BUCKWALTER CONNECTING ROD ALIGNING DEVICE

REPAIRMEN: You realize that for A-1 results you must test and align every rod—on every motor you overhaul. The Buckwalter Aligning device is the quickest and most accurate tool for the purpose ever devised. Shows in a second to the thousandth of an inch any inaccuracy in a connecting rod. Nine bushings furnished with the tool enable you to test any size rod. So simple in operation that even an inexperienced mechanic can straighten connecting rods accurately and quickly.

Carefully made to insure absolute accuracy and stability.

JOBBERS: There is still some good territory open for progressive distributors. Full information on request.

JOHN S. BUCKWALTER CO.
413-415 N. Mary St., Lancaster, Penna.

DRESSING, Mohair Top (Continued)

- Bergh Specialty Co., 1435 McCadden Pl., Los Angeles, Cal.
- Billings-Chapin Co., 1163 E. 40th St., Cleveland, O.
- Black-Lak—See Johnson & Son.
- Blood & Co., T. L., 413 Wacouts St., St. Paul, Minn.
- Blue Ribbon—See International Metal Polish Co.
- Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
- Butler-Harley Co., 33rd & Master Sts., Philadelphia, Pa. "Harco."
- Campbell Glass & Paint Co., Main & Gratiot Sts., St. Louis, Mo.
- Certain-teed Products Corp., Boatmens Bank Bldg., St. Louis, Mo.
- Chase, Roberts & Co., Fifth St. & West Ave., Long Island City, N. Y.
- Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)
- Conco—See Conewango Chemical Co.
- Conewango Chemical Co., Warren, Pa. "Conco."
- Day & Co., James B., 224-26 W. Superior St., Chicago, Ill.
- Dealers Motor Supply Corp., Second National Bank Bldg., Uniontown, Pa.
- Dibble Color Co., 129 Larned St., W., Detroit, Mich.
- Dull-Lac—See Auto Specialties Mfg. Co.
- du Pont de Nemours & Co., E. I. (Paint & Varnish Division), Wilmington, Del.
- Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie," "All-in-One."
- Eberson-Lindsley Paint Co., 1830-82 Morgan St., St. Louis, Mo.
- E-Fac-Tiv—See Permatite Mfg. Co.
- Effecto—See Pratt & Lambert.
- Evernew—See Felton, Sibley & Co.
- Felton, Sibley & Co., 126-40 N. Fourth St., Philadelphia, Pa. "Evernew."
- Fiebing Chemical Co., 233-40 Reed St., Milwaukee, Wis.
- Glidden Sales Co., 573-75 Forest Ave., Buffalo, N. Y. "Koto."
- Go-Co Compound Co., 206 E. 67th St., New York, N. Y.
- Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker," "Quad-Lac." (See page 655.)
- Harco—See Butler-Harley Co.
- Hardy Paint & Varnish Co., Oakwood & M. C. R. R. Toledo, O.
- Heath & Milligan Mfg. Co., 1833 Seward St., Chicago, Ill.
- Hippo—See American Chemical & Mfg. Co.
- Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
- I. C. U.—See Livingston Co.
- International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
- Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Black-Lak."
- Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
- Kneutop—See Western Reserve Varnish Co.
- Koto—See Glidden Sales Co.
- Leath-R-Nu—See Nu-Back Mfg. Co.
- Liberty Chemical Works, Chicago, Ill. (See page 783.)
- Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
- Linsco—See Lins Mfg. Co.
- Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
- Lowe Mfg. Co., J. H., Auburn Rd., Seneca Falls, N. Y. "Owl."
- Lucas & Co., John, 322-30 Race St., Philadelphia, Pa.
- McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
- Mansfield Mfg. Co., 322 S. Clinton St., Syracuse, N. Y.
- Mengo Products Co., 537 Rosedale St., (Wilkinsburg) Pittsburgh, Pa.
- Mid West Co., 30 Ionia Ave., S. W., Grand Rapids, Mich.
- Miller Co., Frank, 349-51 W. 28th St., New York, N. Y.
- Miller Oil Products Corp., Bloomfield, N. J.
- Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
- Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
- Moore & Co., Benjamin, 231-33 Front St., Brooklyn, N. Y.
- Nation Co., 382 W. 16th St., Los Angeles, Cal.
- Neals—See Acme White Lead & Color Works.
- Noble Plano Co., 4841 Woodward Ave., Detroit, Mich.
- Northwestern Chemical Co., 735 State St., Marietta, O. "Norwesco." (See page 275.)
- Norwesco—See Northwestern Chemical Co.
- Nu-Back Mfg. Co., 213-15 E. Second St., St. Louis, Mo. "Leath-R-Nu."
- NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
- Nutop—See Oriental Compound Co.
- O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
- Oriental Compound Co., 306 W. Lancaster Ave., Ardmore, Pa. "Nutop."
- Owl—See Lowe Mfg. Co.
- Peerless—See Columbus Varnish Co.
- Perfectite—See Price Fire & Water Proofing Co.
- Perma-Lac Mfg. Co., Wilkes-Barre, Pa. (See page 623.)
- Permatex Co., Sheephead Bay, N. Y. (See page 277.)
- Pimbley Paint & Glass Co., 213 E. Sixth St., St. Joseph, Mo. "Top-Newer."
- Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Effecto."
- Preservo—See Robeson Preservo Co.
- Price Fire & Water Proofing Co., 43 Union St., Foughkeapsie, N. Y. "Perfectite," "Revivit," "Protectol."
- Protectol—See Price Fire & Water Proofing Co.
- Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
- Quad-Lac—See Hall-Thompson Co.
- Rainoil—See Waterproof Oil Products Co.
- Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
- Revivit—See Price Fire & Water Proofing Co.
- Rie-Nie—See Durkee-Atwood Co.
- Robeson Preservo Co., White Bk., Port Huron, Mich. "Preservo."
- Rome—See Howard Lubricants Co.
- Sek Mfg. Co., 4301 W. Kinzie St., Chicago, Ill. "Aut-O-Sek."
- Simoniz—See Simons Mfg. Co.
- Simons Mfg. Co., 2131 Michigan Ave., Chicago, Ill. "Simoniz."
- Silkup—See Arnold, N. B.
- Sterno Corp., New York, N. Y. (See page 269.)
- Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)

Everything is listed under the NOUN or principal word



Will You Cut Costs or Quality to Sell Your 1922 Light Truck?

If you are maintaining quality while cutting costs, you will be glad to have Flint Axles; and we will give you all our considerable help to produce a low-priced valuable light truck.

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Flint Axles for trucks to two tons enable you to cut the price of your product without sacrifice of performance, loss of profit, or jeopardy of reputation. Ask for estimates and particulars.

FLINT MOTOR AXLE CO.
FLINT, MICHIGAN

DRESSING, Mohair Top (Continued)

Top-Newer—See Pimbley Paint & Glass Co.
 Twin City Varnish Co., 208 N. Wabash Ave., Chicago, Ill. "Twinco."
 Twinco—See Twin City Varnish Co.
 Waterproof Oil Products Co., 1717 Westlake, N. Seattle, Wash. "Rainoil."
 West's Sons, L. M., 230 Broadway, Rockford, Ill.
 Western Reserve Varnish Co., Cleveland, O. "Kneutop."
 Wonder Worker—See Hall-Thompson Co.

DRESSING, TOP—See Dressing, Leather; also Dressing, Mohair

DRESSING, UPHOLSTERY—See Dressing, Leather

DRIFT PINS—See Punches, Center, Prick and Drift

DRIFT PUNCHES—See Punches, Center, Prick and Drift

DRILL CHUCKS—See Chucks, Drill

DRILL, ENAMELED—See Cloth, Enameled

DRILL GAGES—See Gages, Drill

DRILL GRINDERS—See Grinders, Drill

DRILLING COMPOUNDS—See Lubricants, Cutting

DRILLING BUSHINGS — See Bushings, Drilling and Reaming

DRILLS and BITS, Battery Strap

(Special Drills and Bits for Drilling off the Strap or Connector on Storage Batteries when making repairs)

Larson & Lundberg, 325 N. Main St., Ke-wanee, Ill.
 Xander, J. G., 824 Court St., Reading, Pa.

DRILLS, Breast

Consolidated Tool Works, 296 Broadway, New York, N. Y. "Pilot."

Frey Co., John S., 936 Crescent Ave., Bridgeport, Conn.

Goodell-Pratt Co., Greenfield, Mass.

Malleable Iron Fittings Co., Branford, Conn. "Mifco." (See page 259.)

Mifco—See Malleable Iron Fittings Co.

Millers Falls Co., Millers Falls, Mass. "Star."

North Bros. Mfg. Co., American St. & Lehigh Ave., Philadelphia, Pa. "Yankee."

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Pilot—See Consolidated Tool Works.

Stanley Works (Special Productions Dept.), New Britain, Conn. (See page 457.)

Star—See Millers Falls Co.

Wilkinson & Co., A. J., 180-88 Washington St., Boston, Mass.

Yankee—See North Bros. Mfg. Co.

DRILLS, Centering

Cleveland Twist Drill Co., Cleveland, O. (See page 307.)

Slocumb Co., J. T., 85 Oxford St., Providence, R. I.

DRILLS, GRINDERS and POLISHERS, Electric Portable

American Electric Tool Co., West Newton, Mass.

Arnold Electric Tool Co., New London, Conn.
 Bilt-Rite Equipment Co., 100 Beacon St., Worcester, Mass.

Black & Decker Mfg. Co., Towson Heights, Baltimore, Md.

Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y. "Little Giant."

Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."

Cincinnati Electrical Tool Co., 1501-03 Freeman Ave., Cincinnati, O.

Clark, Jr., Electric Co., James, 520 W. Main St., Louisville, Ky. "Willey."

Coates Clipper Mfg. Co., 227 Chandler St., Worcester, Mass.

Deer Co., A. J., Hornell, N. Y. "Royal."

Dumore—See Wisconsin Electric Co.

Duntley-Dayton Co., 1416 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Saphill Mfg. Co., Chicago, Ill.)

Electro Magnetic Tool Co., 2902-08 Carroll Ave., Chicago, Ill. (See page 351.)

Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.

Gillfillan Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.

Glow Electric Co., 219 Walnut St., Cincinnati, O.

Haskins Co., R. G., 27 S. Desplaines St., Chicago, Ill. (See page 561.)

Hergi Mfg. Co., Bridgeport, Conn.

Hisey-Wolf Machine Co., Marshall & Colerain Aves., Cincinnati, O.

Hus-kee—See Worcester Electric Tool Co.

Ideal—See Neil & Smith Electric Tool Co.

Independent Pneumatic Tool Co., Chicago, Ill. "Thor."

Jones, MacNeal & Camp, 522 S. Clinton St., Chicago, Ill. "Power King."

Kesco One-Hand-Y—See Knight Engineering & Sales Co.

Knight Engineering & Sales Co., 210 W. Seventh St., Los Angeles, Cal. "Kesco One-Hand-Y." (See page 349.)

Little Giant—See Chicago Pneumatic Tool Co.
 Louisville Electric Mfg. Co., Louisville, Ky. "Pioneer."

Neil & Smith Electric Tool Co., 813-15 Broadway, Cincinnati, O. "Ideal."

Petersen Mfg. Co., A. H., 131 Second St., Milwaukee, Wis.

Pioneer—See Louisville Electric Mfg. Co.

Power King—See Jones, MacNeal & Camp.

Racine Electric Co., Racine, Wis.

Rhy-Bon Electric Co., 326 W. Madison St., Chicago, Ill. (Dealers.) (See page 349.)

Royal—See Deer Co.

Saphill Mfg. Co.—See Duntley-Dayton Co.

Standard Electric Tool Co., Cincinnati, O.

Stewart—See Chicago Flexible Shaft Co.

Stow Flexible Shaft Co., 3452 Ludlow St., Philadelphia, Pa.

Stow Mfg. Co., Binghamton, N. Y.

Temco Electric Motor Co., 25 Sugar St., Lelpsic, O. (See page 877.)

Thor—See Independent Pneumatic Tool Co.

U S—See United States Electrical Tool Co.

United States Electrical Tool Co., Cincinnati, O. "U. S." (See page 347.)

Van Dorn Electric Tool Co., 2978 Woodhill Rd., Cleveland, O.

Willey—See Clark, Jr., Electric Co.

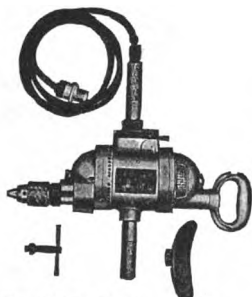
Wisconsin Electric Co., Racine, Wis. "Duore." (See page 349.)

Wodack Electric Tool Corp., 23-27 S. Jefferson St., Chicago, Ill.

Worcester Electric Tool Co., 42 Southbridge St., Worcester, Mass. "Hus-kee."

Everything is listed under the NOUN or principal word

U. S. Electrical TOOLS



Universal Motor Drill.
1/4 in. Direct or alternating
current, 60 cycle or less.



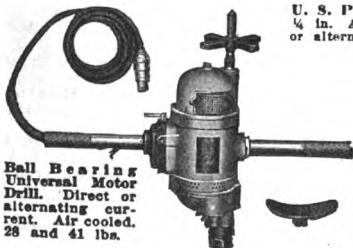
U. S. Portable Grinder.
Direct or alternating current.
Air cooled.



U. S. Portable Grinder.
1/4 hp. Direct
or alternating current. 18
and 21 lbs.



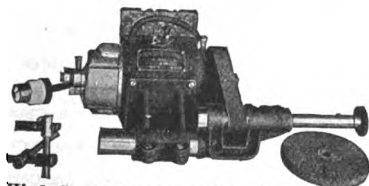
U. S. Portable Drill.
1/4 in. Air cooled. Direct
or alternating current



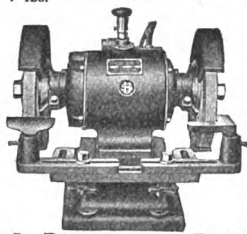
Ball Bearing Universal Motor Drill. Direct or
alternating current. Air cooled.
28 and 41 lbs.



Ball Bearing Universal Motor Drill. Direct or
alternating current. Air cooled. 6 and
7 lbs.



High Speed Internal Grinder. Vertical
adjustment 5 in. Air cooled. Direct or
alternating current of 2 or 3 phases.



U. S. Ball Bearing Bench Grinder. 1 and 2 hp. Direct or
alternating current. Pedestal
furnished extra.

New York Office, 50 Church St., Boston Office, 12 Pearl St., Chicago Office, 8 E. Michigan St.

Works, Cincinnati, Ohio.

The United States Electrical Tool Co.

Write for Complete Catalogue on Portable Tools

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DRILLING MACHINES, Multiple Spindle

- Barnes Drill Co., 814-30 Chestnut St., Rockford, Ill.
 Bausch Machine Tool Co., 156 Wason Ave., Springfield, Mass.
 Cincinnati Automatic Machine Co., 2235 Buck St., Cincinnati, O. "Super-Matic."
 Detroit Machine Tool Co., 6545 St. Antoine St., Detroit, Mich.
 Foote-Burt Co., 4101 St. Clair Ave., Cleveland, O.
 Fox Machine Co., 1811 W. Ganson St., Jackson, Mich.
 Hole Hog—See Moline Tool Co.
 Moline Tool Co., 102-20th St., Moline, Ill. "Hole Hog."
 Natco—See National Automatic Tool Co.
 National Acme Co., Cleveland, O. (See page 601.)
 National Automatic Tool Co., S. Seventh & N Sts., Richmond, Ind. "Natco."
 Pecorp—See Providence Engineering Corp.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Providence Engineering Corp., 521 S. Main St., Providence, R. I. "Pecorp."
 Super-Matic—See Cincinnati Automatic Machine Co.

DRILLS, PNEUMATIC—See Tools, Pneumatic

DRILLS, PORTABLE—See Drills, Grinders and Polishes, Electric Portable

DRILLING MACHINES, Radial

- American Tool Works Co., Pearl & Eggleston Aves., Cincinnati, O.
 Bausch Machine Tool Co., 156 Wason Ave., Springfield, Mass.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Carlton Machine Tool Co., Spring Grove Ave. & Meeker St., Cincinnati, O.
 Cincinnati-Bickford Tool Co., 3220 South St., Cincinnati, O.
 Conradson Machine Tool Co.—See Ryerson & Son.
 Drees Machine Tool Co., 227-39 W. Micken Ave., Cincinnati, O.
 Fodick Machine Tool Co., Blue Rock & Apple Sts., Cincinnati, O.
 Hammond Mfg. Co., 6545 Carnegie Ave., Cleveland, O.
 Hilbert Machine Co., 2116-22 Colerain Ave., Cincinnati, O.
 Morris Machine Tool Co., Court & Harriet Sts., Cincinnati, O.
 Mueller Machine Tool Co., 3425-29 Colerain Ave., Cincinnati, O.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Reed-Prentice Co., 677 Cambridge St., Worcester, Mass.
 Ryerson & Son, Joseph T., 2558 W. 16th St., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)
 Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 Western Machine Tool Works, Holland, Mich.

DRILLS, Ratchet

- Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 885.)
 Atha Tool Co., Chapel St., Newark, N. J.

- Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn. "Packer."
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Diamond—See Whitman & Barnes Mfg. Co.
 Goodell-Pratt Co., Greenfield, Mass.
 Hunter Machine Co., Jas., 16 Main St., North Adams, Mass.
 Keystone Mfg. Co., 41 Chandler St., Buffalo, N. Y.
 Lowell Wrench Co., 54 Commercial St., Worcester, Mass.
 Lutz Co., Morris, Bambrey & Moore Sts., Philadelphia, Pa.
 Millers Falls Co., Millers Falls, Mass. "Star."
 Oswego Tool Co., 119-27 W. First St., Oswego, N. Y. "Packer."
 Packer—See Billings & Spencer Co.
 Packer—See Oswego Tool Co.
 Parker Co., Charles, 48 Elm St., Meriden, Conn.
 Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
 Peerless Wrench Co., 98 Sprague St., Providence, R. I.
 Pexto—See Peck, Stow & Wilcox Co.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y. "Renshaw."
 Renshaw—See Pratt & Whitney Co.
 Star—See Millers Falls Co.
 Whitman & Barnes Mfg. Co., E. Exchange St., Akron, O. "Diamond."

DRILLING MACHINES, Sensitive

- Avey Drilling Machine Co., Cincinnati, O.
 Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
 Burke Machine Tool Co., Sandusky St., Conneaut, O.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Cincinnati Hi-Speed Machine Co., 208 Lawrence St., Cincinnati, O.
 Clark, Jr., Electric Co., James, 530 W. Main St., Louisville, Ky. "Willey."
 Corbin-Church Co., New Britain, Conn.
 Fox Machine Co., 1811 W. Ganson St., Jackson, Mich.
 Henry & Wright Mfg. Co., 760 Windsor St., Hartford, Conn. "Wright."
 Hoyward & Case, 181 Cornell St., Kingston, N. Y.
 Langeller Mfg. Co., 51 Washington Ave., Arlington Cranston, R. I.
 Leland-Gifford Co., 1025 Southbridge St., Worcester, Mass.
 Meyers—See Superior Engineering Works.
 Myers Machine Tool Co., Second & Chestnut Sts., Columbia, Pa.
 North Wales Machine Co., Elm Ave & Center St., North Wales, Pa.
 Pecorp—See Providence Engineering Corp.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Providence Engineering Corp., 521 S. Main St., Providence, R. I. "Pecorp."
 Reed Co., Francis, 43 Hammond St., Worcester, Mass.
 Reed-Prentice Co., 677 Cambridge St., Worcester, Mass.
 Rockwell—See Ryerson & Son.
 Ryerson & Son, Joseph T., 2558 W. 16th St., Chicago, Ill. "Rockwell."
 Sipp Machine Co., Keen & Warren Sts., Paterson, N. J.
 Stapf & Co., John B., Dunkirk, N. Y.
 Superior Engineering Works, Small Bldg., York, Pa. "Meyers."

Everything is listed under the NOUN or principal word

ONE-HAND-Y DRILL

Weights only three pounds complete—drills one-quarter inch holes or smaller in wood or metal. Also grinds, polishes, etc. Write for details.

RHY-BON ELECTRIC COMPANY

326 W. Madison St., Chicago



DUMORE UPHOLSTERY CLEANER

Brushes out dust and dirt, then suction cleans. A money-maker to use or sell.

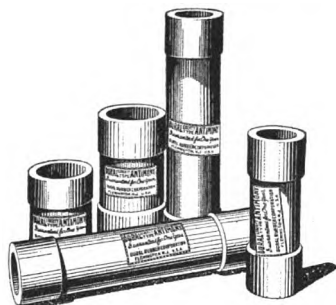
DUMORE DRILL-VALVE GRINDER TOOL GRINDER-BUFFER

A handy, portable motor with four attachments that save time and money for garages.

*Write for descriptive folder
and sales plans*

Wisconsin Electric Company
Racine, Wisconsin

548



DURAL HOSE CONNECTIONS

Of tough antimony red rubber. Made in five sizes, fitting most makes of cars. Outlast two or three ordinary fabric hose connections. Occupy little space, move quickly and afford a liberal profit. Write for details.

DURAL RUBBER CORP.
FLEMINGTON, N. J.

Do it with the ONE-HAND-Y DRILL

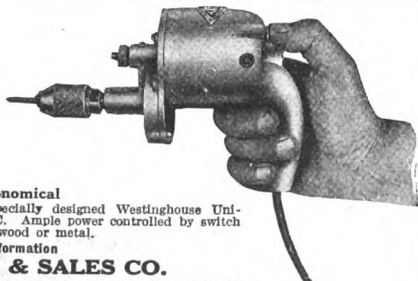
Light—Dependable—Economical
Weights only 3 lbs.—8 inches long—equipped with specially designed Westinghouse Universal Type Motor—110, 220 and 32 Volt A. C. or D. C. Ample power controlled by switch always under thumb. Drills holes $\frac{1}{4}$ " or smaller in wood or metal.

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DRILLING MACHINES, Sensitive (Continued)

Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 United States Machine Tool Co., Richmond St. & McLean Ave., Cincinnati, O.
 Washburn Shops, Boynton St., Worcester, Mass.
 Willey—See Clark, Jr., Electric Co.
 Wright—See Henry & Wright Mfg. Co.

DRILLS, TAPPING—See Drills, Upright

DRILLS, Twist

Alvord Reamer & Tool Co., Millersburg, Pa. (See page 701.)
 American Machine Products Co., 18th & Howard Sts., Detroit, Mich. "Ampco."
 American Twist Drill Co., W. Jefferson Ave. & 21st St., Detroit, Mich.
 Ampco—See American Machine Products Co.
 Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Twist Drill & Tool Co., Taunton, Mass.)
 Blancke Twist Drill & Tool Co.—See Blancke Co.
 Buckeye Twist Drill Co., Elm St., Alliance, O.
 Celfor—See Clark Equipment Co.
 Clark Equipment Co., Buchanan, Mich. "Celfor."
 Cleveland Twist Drill Co., Cleveland, O. "Paragon." (See page 367.)
 Colton Co., Arthur, 2600 E. Jefferson Ave., Detroit, Mich. "Colton-Detroit."
 Colton-Detroit—See Colton Co.
 Detroit Twist Drill Co., Detroit, Mich. (See page 351.)
 Diamond—See Whitman & Barnes Mfg. Co.
 Fastfeed Drill & Tool Corp., Clinton & Oakwood Sts., Toledo, O.
 Hercules—See Whitman & Barnes Mfg. Co.
 Lincoln Twist Drill Co., Arlington St., Taunton, Mass.
 McCarthy Drill & Tool Corp., 30 Church St., New York, N. Y.
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.
 New Process Twist Drill Co., 34 Court St., Taunton, Mass.
 Paragon—See Cleveland Twist Drill Co.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 R. S. P.—See Rich Steel Products Co.
 Rich Steel Products Co., Springfield Pl., Batte Creek, Mich. "R. S. P."
 Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1058.)
 Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
 Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.
 Union Twist Drill Co., Chestnut Hill Ave., Athol, Mass.
 Whitaker Mfg. Co., Chicago, Ill. (See page 311.)
 Whitman & Barnes Mfg. Co., E. Exchange St., Akron, O. "Diamond," "Hercules."

DRILLING MACHINES, Upright

Aurora Tool Works, Aurora, Ind.
 Baker Bros., Westlake Ave. & Post St., Toledo, O.

Barnes Co., W. F. & John, 439 Ruby St., Rockford, Ill.
 Barnes Drill Co., 814-30 Chestnut St., Rockford, Ill.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Champion Mfg. Co., 2908-10 W. Fletcher St., Philadelphia, Pa.
 Cincinnati-Bickford Tool Co., 3220 South St., Cincinnati, O.
 Colburn Machine Tool Co., 1033 Ivanhoe Rd., Cleveland, O.
 Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.
 Economy—See Rockford Lathe & Drill Co.
 Foote-Burt Co., 4101 St. Clair Ave., Cleveland, O. "Reliance."
 Fosdick Machine Tool Co., Blue Rock & Apple Sts., Cincinnati, O.
 Hilbert Machine Co., 2116-23 Colerain Ave., Cincinnati, O.
 Hofer Mfg. Co., Chicago & Jackson Sts., Freeport, Ill.
 Hoosier Drilling Machine Co., 612-14 E. Madison St., Goshen, Ind.
 Kokomo—See Superior Machine Tool Co.
 Mill City Co., Minneapolis, Minn.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Reed-Prentice Co., 677 Cambridge St., Worcester, Mass.
 Reliance—See Foote-Burt Co.
 Rockford Lathe & Drill Co., Rockford, Ill. "Economy."
 Rockford Drilling Machine Co., ft. Catherine St., Rockford, Ill.
 Rockford Machine Tool Co., 2400 Kishwaukee St., Rockford, Ill.
 Sibley Machine Co., 204-22 E. Tutt St., South Bend, Ind.
 Snyder & Son, J. E., Worcester, Mass.
 Superior Machine Tool Co., E. Differbaugh St., Kokomo, Ind. "Kokomo."
 Taylor & Fenn, 54-70 Arch St., Hartford, Conn.
 Tschudi-McBarron Machine Co., Dayton, O.

DRIP COCKS—See Cocks

DRIP PANS—See Pans, Drip

DRIVE SHAFT BEARING END MILLS FOR FORDS—See Mills, Dry Shaft Bearing End

DRIVE GEAR BEARINGS FOR FORDS—See Bearings, Drive Gear Ball Thrust and Roller

DRIVE SHAFT BUSHING REAMERS FOR FORDS—See Reamers.

DRIVE SHAFT HOUSING BRACES FOR FORDS—See Braces, Drive Shaft Housing

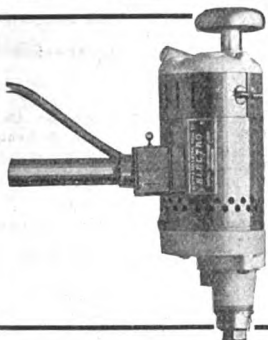
DRIVE SHAFT STEADY BEARINGS—See Bearings, Drive Shaft Steady

DRIVE SHAFTS—See Shafts, Propeller

DRIVERS, Screw

American Automatic Devices Co., Chicago, Ill. "Giant." (See page 251.)
 Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
 Auto Forge Sales Co., 80 King Ave., Columbus, O. "Columbus."

Everything is listed under the NOUN or principal word



A SUPURB $\frac{1}{2}$ " CAPACITY IN STEEL
PORTABLE ELECTRIC DRILL
FOR

\$55⁰⁰ ——— PAY NO MORE!

A quality tool; light, sturdy, powerful

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DETROIT TWIST DRILLS

REAMERS, CUTTERS
SPECIAL TOOLS ETC

USED ALMOST
EXCLUSIVELY
BY MANY OF
THE LARGEST
AUTOMOBILE
PARTS AND
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EVERSAFE! KNOWN EVERYWHERE

EMERGENCY BRAKE FOR FORDS



Band Steel made in Types A and B. Type A is non-adjustable; Type B is adjustable for wear of lining or drums; by spring jaws of shoes to one side by placing washers on jaws of shoe and securing by bolt and nut. Once wheels are applied it is necessary to remove them to make adjustment.

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Type B—Adjustable	2.50
Type C—Unlined, Outside Adjustment.....	3.50
Type D—Lined, Outside Adjustment.....	5.00

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LEE'S BALL BEARING AUTOMATIC CONTACT TIMER

Its Easy Starting Prolongs
Life of Battery.
Gives Power and Speed.
Saves 5 Gallons out of
every 100 on Gas.

No parts needed.
No waving of case.
No vibration.
No wear.
No stalling or shorting.
No jerking.
No missing.
50,000 Miles Guaranteed.
Price \$5.00.

Liberal discounts to Jobbers and Dealers.
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DRIVERS, Screw (Continued)

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J. "New Century," "O. K., "Ideal."
 Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Challenge," "Hercules," "Matchless."
 Buffum Tool Co., Louisiana, Mo. (See page 883.)
 C-S Co.—See Chapins-Stephens Co.
 Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.
 Cassady-Fairbank Mfg. Co., 6126 S. La Salle, Chicago, Ill.
 Challenge—See Bridgeport Hardware Mfg. Corp.
 Champion—See Union Hardware Co.
 Chapin-Stephens Co., Pine Meadow, Conn. "C-S Co.," "Elmore."
 Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."
 Coates Clipper Mfg. Co., 237 Chandler St., Worcester, Mass.
 Columbus—See Auto Forge Sales Co.
 Crescent Tool Co., 204 Harrison St., Jamestown, N. Y. "Hamr-Handl."
 Dahl, J. L.—See Arrow Specialty Co.
 De Lasser Mfg. & Export Corp., 309 Broadway, New York, N. Y. (Sole Distributors for Hergl Mfg. Co., Bridgeport, Conn.)
 Dikeman Mfg. Co., Merwin St., Norwalk, Conn.
 Diaston Sons, Henry, (Tacony) Philadelphia, Pa.
 Dixie—See Southern Machine & Tool Co.
 Edelmann & Co., E., 2638 N. Cravford Ave., Chicago, Ill. "Four-in-One." (See page 523.)
 Elmore—See Chapin-Stephens Co.
 Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.
 Four-in-One—See Edelmann & Co.
 Gay, Geo. E., Augusta, Me.
 Giant—See American Automatic Devices Co.
 Giant—See Tuck Mfg. Co.
 Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.
 Goodell-Pratt Co., Greenfield, Mass.
 Hamr-Handl—See Crescent Tool Co.
 Hargrave—See Cincinnati Tool Co.
 Harrold Tool & Forge Co.—See Wilbusch & Hilger.
 Herbrand Co., 109-25 E. State St., Fremont, O.
 Hercules—See Tuck Mfg. Co.
 Hercules—See Bridgeport Hardware Mfg. Corp.
 Hergl Mfg. Co., Bridgeport, Conn.
 Holt Co., G. L., 16 Sigourney St., Hartford, Conn. "Sure Holt."
 Hurwood—See Stanley Works.
 Ideal—See Braunsdorf-Mueller Co.
 Ives Mfg. Co., W. A., Wallingford, Conn. "Mephisto."
 Jiffy—See Shultis Automotive Corp.
 Lane Unique Tool Co., Will B., 170 W. Randolph St., Chicago, Ill. "Unique."
 Lipscomb—See Ellis Co.
 M-B Tool Co., Danielson, Conn.
 Marcy Tool Works, Putnam, Conn.
 Matchless—See Bridgeport Hardware Mfg. Corp.
 Mayhew Steel Products Co., 291 Broadway, New York, N. Y. "Perpetuo," "Peerless."
 Mephisto—See Ives Mfg. Co.
 Millers Falls Co., Millers Falls, Mass. "Star."

Milwaukee Tool & Forge Co., 220 Becker St., Milwaukee, Wis.
 Mound Tool Co., Dept. D, Seventh & Hickory Sts., St. Louis, Mo.. (See page 887.)
 Never Break—See S. & I. Co.
 New Century—See Braunsdorf-Mueller Co.
 North Bros. Mfg. Co., American St. & Lehigh Ave., Philadelphia, Pa. "Tankee."
 O. K.—See Braunsdorf-Mueller Co.
 Ohio Tool Co., Charleston, W. Va.
 Osborne & Co., C. S., Newark, N. J.
 Peck, Stow & Wilcox Co., Southington, Conn. "Pexto," "Solbar."
 Peerless—See Mayhew Steel Products Co.
 Perfect Handle—See Smith & Co.
 Perpetuo—See Mayhew Steel Products Co.
 Pexto—See Peck, Stow & Wilcox Co.
 Red Devil—See Smith & Hemenway.
 Reliable—See S. & I. Co.
 Rival—See S. & I. Co.
 S. & I. Co., 55-57 Governor St., Springfield, Mass. "Never Break," "Reliable," "Rival."
 Shultis Automotive Corp., 138 W. 65th St., New York, N. Y. (Sole Distributors for Dahl, J. L., Hackensack, N. J. "Jiffy.")
 Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."
 Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."
 Snell Mfg. Co., Fiskdale, Mass.
 Solbar—See Peck, Stow & Wilcox Co.
 Southern Machine & Tool Co., 3210 Locust St., St. Louis, Mo. "Dixie." (See page 879.)
 Stanley Works (Special Productions Dept.), New Britain, Conn. "Hurwood." (See page 457.)
 Star—See Millers Falls Co.
 Starrett Co., L. S., Athol, Mass.
 Stortz & Son, John, 210-12 Vine St., Philadelphia, Pa.
 Sure Holt—See Holt Co.
 Swan & Co., Jas., 279 Bank St., Seymour, Conn.
 Thomson Drop Forge Co., W. Main St., Plantsville, Conn.
 Tuck Mfg. Co., 74 Ames St., Brockton, Mass. "Hercules," "Giant."
 Union Hardware Co., Torrington, Conn. "Champion," "Valley."
 Union Tool Co., 48 E. River St., Orange, Mass.
 Unique—See Lane Unique Tool Co.
 Valley—See Union Hardware Co.
 Vlecek Tool Co., 3000 E. 87th St., Cleveland, O.
 Whitaker Mfg. Co., Chicago, Ill. (See page 311.)
 Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harrold Tool & Forge Co., Columbiana, O.)

DRIVERS, SHAFT, FOR FORDS—See Mills, Dry Shaft Bearing End

DRIVING CHAIN—See Chain, Transmission

DRIVING GEARS FOR FORDS—See Gears, Special Ratio

DROP FORGED WHEELS—See Wheels, Drop Forged

DROP FORGED WRENCHES—See Wrenches, Nut and Bolt

Everything is listed under the NOUN or principal word

DROP FORGINGS—See Forgings, Drop

DROP HAMMERS—See Hammers, Power

DRUM CLAMPS FOR FORDS—See Clamps or Vises, Transmission Drum Repairing

DRUM HOLDERS, TRANSMISSION FOR FORDS—See Holders, Transmission Drum

DRUMS, BRAKE—See Drums, Pressed Steel Brake

DRUMS, Pressed Steel Brake

(See also Stampings, Metal; for Cast Drums—See Castings)

American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.

Bossert Corp., Utica, N. Y.

Brewer Tichener Corp., Cortland, N. Y.

Crosby Co., Buffalo, N. Y. (See page 813.)

Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis.

Globe Machine & Stamping Co., Cleveland, O. (See page 155.)

Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O.

Kelsey Wheel Co., Detroit, Mich. (See page 953.)

Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.

Milwaukee—See Pressed Steel Tank Co.

Parish & Bingham Corporation, Cleveland, O. (See page 242.)

Powell Pressed Steel Co., Hubbard, O. (See page 949.)

Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa.

Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis. "Milwaukee."

Sharon Pressed Steel Co., Sharon, Pa. (See page 391.)

Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)

DRY BATTERIES—See Batteries, Dry

DRY BATTERY CONNECTORS—See Connectors, Dry Battery

DRYING ROOMS—See Rooms, Paint

DUCK, ENAMELED—See Cloth, Enameled

DUMMY EXTENSIONS FOR FORDS—See Extensions, Dummy Frame

DUMMY RADIATORS FOR FORDS—See Hoods, Radiator

DUMPING BODIES—See Bodies, Special Dumping; also Bodies, Automatic Dumping, for Fords

DUST CAPS—See Caps, Tire Dust Valve; also Protectors, Front Wheel Bearing for Fords

DUST PANS—See Pans, Dust

DUST RINGS—See Washers, Felt

DUSTERS, MOTORISTS'—See Clothing, Motorists'

DYE, Top Lining

(For restoring or changing the color of top linings)

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)

Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."

Auto Products Mfg. Co., Buffalo, N. Y. "Cov-R-Blak."

Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 343.)

Autonamel Co., 94-97 St. Paul St., Rochester, N. Y.

Be-Be-Co.—See Boston Blacking Co.

Baum's Castorine Co., 104 N. George St., Rome, N. Y.

Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)

Cov-R-Blak—See Auto Products Mfg. Co.

Dutch—See Van Cleef Bros.

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Eberson-Lindsley Paint Co., 1820-22 Morgan St., St. Louis, Mo.

E-Fec-Tiv—See Permatite Mfg. Co.

Fiebing Chemical Co., 235-40 Reed St., Milwaukee, Wis.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 655.)

Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whiz."

Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linaco."

Linsco—See Lins Mfg. Co.

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Mansfield Mfg. Corp., 322 S. Clinton St., Syracuse, N. Y.

Mid West Co., 30 Ionia Ave., S. W., Grand Rapids, Mich.

Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)

Norwesco—See Northwestern Chemical Co.

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo.

Peerless—See Columbus Varnish Co.

Permatex Co., Sheepshead Bay, N. Y. (See page 277.)

Permatite Mfg. Co., 21 Fifth St., N. E. Minneapolis, Minn. "E-Fec-Tiv."

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rie-Nie—See Durkee-Atwood Co.

Silkup—See Arnold, N. B.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Whiz—See Hollingshead Co.

Wonder Worker—See Hall-Thompson Co.

Everything is listed under the NOUN or principal word

DYNAMOMETERS, Electric Testing

(For testing the power of gasoline motors; see also *Dynamometers, Hydraulic*)

Alden, Geo. I., 48 Queen St., Worcester, Mass.
Diehl Mfg. Co., Trumbull & Second Sts., Elizabethport, N. J.
Sprague Electric Works, 527 W. 34th St., New York, N. Y.

DYNAMOMETERS, Hydraulic Testing

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Gulley—See Burr Co.
Herschell-Spillman Motor Co., North Tonawanda, N. Y.
Standard Motor Construction Co., 172-80 Whiton St., Jersey City, N. J.

DYNAMOMETERS, Hydrostatic

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Froude—See Wheeler Mfg. Co.
Szekely Co., O. E., 1516 Fourth Ave., Moline, Ill.
Wheeler Mfg. Co., C. H., Philadelphia, Pa. "Froude."

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Allis-Chalmers Mfg. Co., Milwaukee, Wis.
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Diehl Mfg. Co., Trumbull & Second Sts., Elizabethport, N. J.
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Ellington Electric Co., 520-28 S. Fourth St., Quincy, Ill.
F-B Electric & Mfg. Co.—See Fairbanks Co.
Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.)
(See pages 491 to 494.)
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.
Globe Electric Co., 10 Keefe Ave., Milwaukee, Wis.
H-B—See Hobart Bros. Co.
Hobart Bros. Co., Troy, O. "H-B."
Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.
Kendrick & Davis Co., Lebanon, N. H.
Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.
Langstadt-Meyer Co., 787 College Ave., Appleton, Wis.
Main Electric Co., Cleveland, O.
Martin—See Northwestern Electric Co.
Northwestern Electric Co., 811-15 W. Adams St., Chicago, Ill. "Martin."
Robbins & Myers Co., Springfield, O.
Sprague Electric Works, 527 W. 34th St., New York, N. Y.

Superior Engineering Co., 333 Third Ave., Pittsburgh, Pa.
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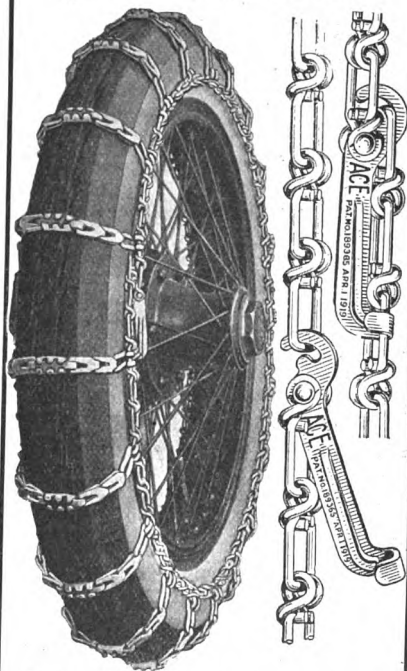
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Marvelous—See Dream Electrolyte Co.

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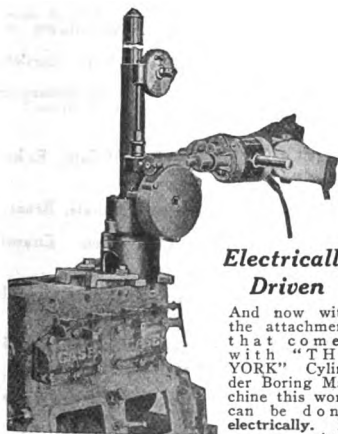
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Cleveland Varnish Co., Cleveland, O.

Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)

Detroit White Lead Works, 1960 Milwaukee Ave., E. Detroit, Mich. "Rogers."

Dibble Color Co., 445 Larned St., W., Detroit, Mich.

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Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.

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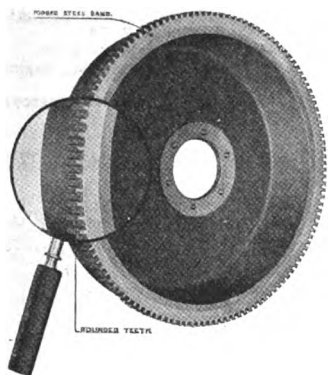
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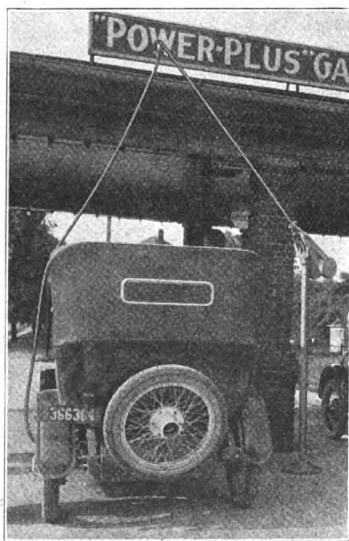
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Climax Engineering Co., 1800 S. Fourth St., Clinton, Ia.

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Midwest Engine Co., Indianapolis, Ind. (See page 14.)

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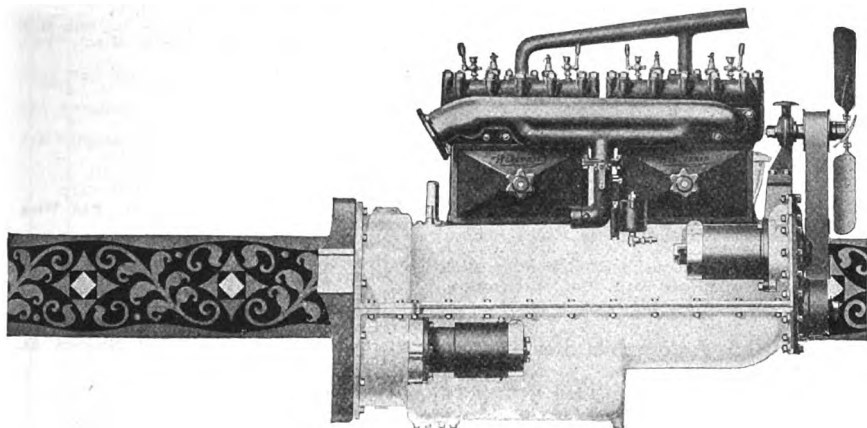
Standard Motor Construction Co., 172-80 Whiton St., Jersey City, N. J.

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E. A. U.	4 x 5	4	En-bloc	25.6
T. A. U.	4 x 6	4	En-bloc	25.6
U. A. U.	4 $\frac{1}{2}$ x 6	4	En-bloc	28.9
V. A. U.	4 $\frac{1}{2}$ x 6	4	En-bloc	32.4
R. A. U.	4 $\frac{1}{2}$ x 6	4	In pairs	36.1
R. B. U.	5 x 6	4	In pairs	40
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Weidely Motors Co., 200 Shelby St., Indianapolis, Ind. "Bull Dog."
Wellman-Seaver-Morgan Co., 7000 Central Ave., Cleveland, O.
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Wisconsin Motor Mfg. Co., Milwaukee, Wis. (See page 361.)

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Brennan Motor Mfg. Co., 500 E. Water St., Syracuse, N. Y.
Bridgeport Motor Co., 105 Kossuth St., Bridgeport, Conn.
Buda Co., Harvey, Ill.
Buffalo Gasoline Motor Co., 1280-90 Niagara St., Buffalo, N. Y.
Bull Dog—See Weidely Motors Co.
Central Service Corp., 1007 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
Continental Motors Corp., Detroit, Mich. "Red Seal." (See page 237.)
Doman—See Universal Products Co.
Duesenberg Motor Corp., 120 Broadway, New York, N. Y.
Erd Motor Co., 300-04 Mackinaw St., Saginaw, Mich.
Gray Beall—See Gray Motor Corp.
Gray Motor Corp., Detroit, Mich. "Gray Beall." (See page 365.)
Grohman Motor Mfg. Co., Liberty Bldg., East Greenville, Pa.
Hercules Motor Mfg. Co., 140 Halliwell Pl., Canton, O.
Herschell-Spillman Motor Co., North Tonawanda, N. Y.
Highway Engine Co., Defiance, O.
Hinkley Motors Corp., High & Cicotte Sts., Ecorse, Mich.
Knox Motors Associates, Springfield, Mass.
L. M. F.—See Light Mfg. & Foundry Co.
Le Roi Co., Mitchell St. & 60th Ave., Milwaukee, Wis. (See page 363.)
Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa. "L. M. F."
Matthews Engineering Co., 460 Monroe St., Sandusky, O. (See page 365.)
Midwest Engine Co., Indianapolis, Ind. (See page 14.)

Minerva Engine Co., Cleveland, O.
Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn. "Twin City."
Mystic Motor Co., 1457 Broadway, New York, N. Y.
Northway Motor & Mfg. Co., Holbrook Ave. & G. T. R. R., Detroit, Mich.
Pittsburgh Model Engine Co., Lexington Ave. & McPherson St., Pittsburgh, Pa.
R. & V. Motor Co., East Moline, Ill.
Red Seal—See Continental Motors Corp.
Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."
Reliable Tractor & Engine Co., Portsmouth, O.
Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."
Sphinx Motor Co., 323 N. Waller St., Chicago, Ill.
Stearns Motor Mfg. Co., Ludington, Mich.
Sterling Engine Co., 1252-73 Niagara St., Buffalo, N. Y.
Supreme Motors Corp., Warren, O. (See page 240.)
Thorobred—See Red Wing Motor Co.
Thorobred—See Scripps Motor Co.
Toro Mfg. Co., 3062 Snelling Ave., Minneapolis, Minn.
Townsend Mfg. Co., S. Franklin St. & Western Ave., Janesville, Wis.
Turmo—See Turner & Moore.
Turner & Moore Mfg. Co., 4650 Merritt Ave., Detroit, Mich. "Turmo."
Twin City—See Minneapolis Steel & Machinery Co.
Universal Products Co., Oshkosh, Wis. "Doman."
Walker Co., H. J., 131st St. & Taft Ave., Cleveland, O.
Waukesha Motor Co., Waukesha, Wis.
Weidely Motors Co., 200 Shelby St., Indianapolis, Ind. "Bull Dog."
Wellman-Seaver-Morgan Co., 7000 Central Ave., Cleveland, O.
Willson Co., H. J., Cleveland, O.
Wisconsin Motor Mfg. Co., Milwaukee, Wis. (See page 361.)

ENGINES, Tractor Kerosene

Avery Company Motor Works, 5701 Mitchell St., Milwaukee, Wis.
Buffalo Gasoline Motor Co., 1280-90 Niagara St., Buffalo, N. Y.
Bull Dog—See Weidely Motors Co.
Climax Engineering Co., 1800 E. Fourth St., Clinton, Ia.
Gray Beall—See Gray Motor Corp.
Gray Motor Corp., Detroit, Mich. "Gray Beall." (See page 365.)
Hatch Engine Co., 2-4 Stone St., New York, N. Y.
Minneapolis Steel & Machinery Co., 29th St. & Minnehaha Ave., Minneapolis, Minn. "Twin City."
Red Wing Motor Co., Levee St., Red Wing, Minn. "Thorobred."
Scripps Motor Co., 5817 Lincoln Ave., Detroit, Mich. "Thorobred."
Thorobred—See Red Wing Motor Co.
Thorobred—See Scripps Motor Co.
Twin City—See Minneapolis Steel & Machinery Co.
Weidely Motors Co., 200 Shelby St., Indianapolis, Ind. "Bull Dog."

ENVELOPES, TOP—See Covers, Top

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The unvarying standard of every Lycoming Motor, its reliability under conditions of unusual service, and the certainty of scheduled deliveries are the manufacturer's assurance of establishing and maintaining the favorable attitude of his customers and prospects.

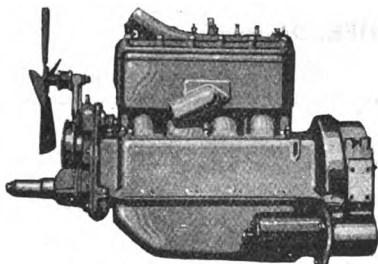
Lycoming Motors Corporation

WILLIAMSPORT, PA.



The Lycoming Motor

—an unusual four



Le Roi the Little Giant of a Motor



If we could bring you through the plant where Le Roi Motors are made, you would see the diligent care and ingenious craftsmanship that is built into every motor.

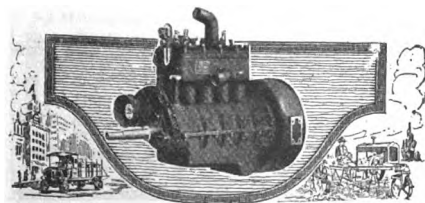
Every little detail of balance and finish on a Le Roi is given the care typical of men who love the motors they make.

The reward for this careful manufacture is reaped in every field where Le Roi Motors are furnishing the pulse of power in machines of many descriptions.

Le Roi Company



MITCHELL ST. AND 60TH AVE.
MILWAUKEE, WIS.



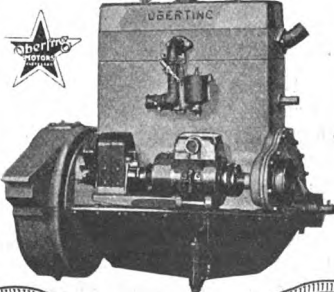
OBERTING MOTOR

Four cylinder valve-in-head, bore $3\frac{1}{4}$ stroke $5\frac{1}{4}$, piston displacement 211 cu. in.; 3 bearing counterbalanced crank shaft $2\frac{1}{4}$ in. diameter; 11 in. connecting rods, $1\frac{3}{4}$ in. valves. Three point suspension. A model of simplicity, strength, reliability and refinement. Unequaled Accessibility.

Write for Specifications and Details

Oberting Motors Company

5320 St. Clair Street
Cleveland, Ohio



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EQUALIZERS, Brake, for Fords

(Device to ensure the equal application of the brakes on both rear wheels to prevent skidding)

Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich.

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."

EQUALIZERS, Trailer Brake

Rayhester Co., Bridgeport, Conn.
(See page 529.)

EQUALIZING GEARS—See Gears, Differential**ESCUTCHEON PINS—See Pins, Escutcheon****ETHER, Denatured**

(For priming engines in cold weather to facilitate starting; See also Fluids, Priming)

Albany Chemical Co., 2-24 Broadway, Albany, N. Y.

EXHAUST DEFLECTORS FOR FORDS—See Deflectors, Exhaust**EXHAUST HORNS—See Horns, Exhaust****EXHAUST MANIFOLDS—See Manifolds****EXHAUST MUFFLERS—See Mufflers, Exhaust****EXHAUST PIPE PAINTS—See Paints, Exhaust Pipe****EXHAUST SILENCERS—See Mufflers, Exhaust****EXHAUST WHISTLES—See Horns, Exhaust****EXPANDERS, Boiler Tube**

Ajax Mfg. Co., 848 Jackson St., Pittsburgh (N. E.), Pa.

Martens Co., E. A., Lafayette, Ind.

EXPANDERS, PISTON RING—See Rings, Piston Ring Expanding**EXPANDERS, RIM—See Tools, Demountable Rim Contracting****EXPANDING BRAKES—See Brakes, Expanding****EXPANDING MANDRELS—See Mandrels, Expanding****EXPLOSION WHISTLES—See Horns, Exhaust****EXTENSION REELS—See Reels, Automatic Extension Lamp****EXTENSION STARTING CRANK HANDLES FOR FORDS—See Handles, Extension Starting Crank****EXTENSION TOOL HANDLES—See Handles, Extension Tool****EXTENSION UNITS FOR FORDS—See Converters****EXTENSIONS, Door Latch for Fords**

Finch—See Wayland Specialty Mfg. Co.

Wayland Specialty Mfg. Co., Wayland, N. Y. "Finch."

EXTENSIONS, Dummy Frame, for Fords

(For attaching to front of car to give appearance of springs)

Corcoran Mfg. Co., 4634 Spring Grove Ave., Cincinnati, O. "Peerless."

Peerless—See Corcoran Mfg. Co.

EXTENSIONS, Gear Shift Lever

(To enable driver to shift gears without unnecessary reaching)

Hughes-Mellins—See M. & H. Novelty Co.
Johnson Automobile Lock Co., 2309 Archer Ave., Chicago, Ill.
(See page 537.)

M. & H. Novelty Co., 1468 W. 28th St., Los Angeles, Cal. "Hughes-Mellins."
(See page 365.)

EXTENSIONS, Gear Shift Lever for Fords

(To enable driver to shift gears without unnecessary reaching)

Extendor—See S. & P. Mfg. Co.

Hughes-Mellins—See M. & H. Novelty Co.
M. & H. Novelty Co., 1468 W. 28th St., Los Angeles, Cal. "Hughes-Mellins."
(See page 365.)

S. & P. Mfg. Co., 255 W. 169th St., New York, N. Y. "Extendor."

EXTENSIONS, Pedal

(For clutch and brake pedals so that adjustments in length may be made)

Fit-All Adjustable Pedal Co., 18 Charlotte St., Timin, O.

Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. (See page 167.)

Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill.

Rich Mfg. Co., 69-71 Greene St., New York, N. Y. "Rico."

Rico—See Rich Mfg. Co.

EXTENSIONS, TIMER WIRE—See Terminals, Timer for Fords**EXTINGUISHERS, Automobile Fire**

(For Car Equipment)

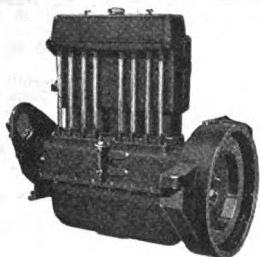
Auto-Fyr—See U. S. Fire Extinguisher Co.

Buffalo Chemical Fire Extinguisher Co., 61-63 Carroll St., Buffalo, N. Y. "Niagara."

Feumort Mfg. Co., 160 Fifth Ave., New York, N. Y.

Fire-Out Mfg. Co., 159 N. Second St., Philadelphia, Pa.

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The Gray-Beall Motor

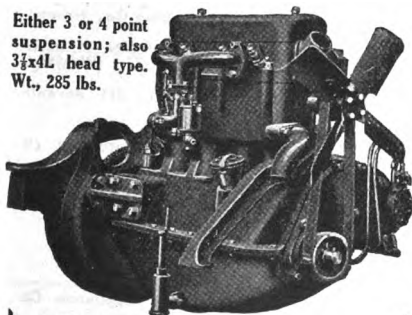
A four cylinder ($3\frac{1}{2}$ " x 5"), cast en bloc, valve-in-head, and entirely enclosed motor.

Maximum of efficiency, low operating cost and minimum vibration feature this truly high class motor.

Gray
Motor Corporation, Detroit

$3\frac{1}{2}$ -in. Bore, 5-in. Stroke—Overhead Valves

Either 3 or 4 point suspension; also $3\frac{1}{2}$ x4L head type. Wt., 285 lbs.



THOROUGHLY standardized; no untried features; wonderful staying power. Same model used by Government in most exacting war service.

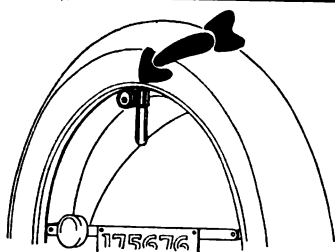
Many thousands now in use all over the world.

Just as dependable for power work as for motor vehicles; three or four point suspension.

Let us send full information

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460 Monroe Street Sandusky, Ohio

MATTHEWS
Auto & Truck
MOTORS



Hughes Tire Lock

Simplicity itself. May be used on any car having a tire carrier with a round hole. Endorsed by insurance officials. Price, \$5.00.

Hughes Extensions

Adjusts length and angle of shift lever to suit. Made for gear shift lever all cars and Ford brake lever.

Order from Jobber
or Direct

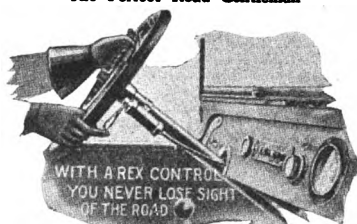
M&H
NOVELTY CO.

1443 W. 28th St.
Los Angeles



Prices: All cars with removable ball top lever, \$1.50. Dodge, Nash, Overland (M75 - 90 - 4), \$1.25. All others, \$2.00. Ford, 1920-21 and all models Ford coupe (full nickel black ball), \$2.00. All other Fords \$1.75.

The New Rex Headlight Control "The Perfect Road Gentleman"



HERE
IT IS

AT YOUR
FINGERTIPS

Just touch the lever on your steering column and regulate your lights gradually to any desired degree. Applicable to all cars.

**IT SAVES ENERGY, LIFE
OF BATTERY AND LAMPS**

Retail Price \$12.50

MANUFACTURED AND GUARANTEED BY
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FOND DU LAC, WISCONSIN

Wm. C. Merrill Company
INCORPORATED

United States Distributors
Security Bldg. Milwaukee, Wis.

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EXTINGUISHERS, Automobile Fire (Continued)

Fire Fighting Devices Co., 70 Fifth Ave., New York, N. Y. "Rapidac."
 Fire Gun Mfg. Co., 115 Fourth Ave., New York, N. Y.
 Foamite Firefoam Co., 200 Fifth Ave., New York, N. Y.
 Fyr-Fyter Co., 221 Crane St., Dayton, O.
 Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y.
 Liberty Chemical Works, Chicago, Ill. (See page 783.)
 New York Brass Foundry Co., 102-04 Centre St., New York, N. Y.
 Niagara—See Buffalo Chemical Fire Extinguisher Co.
 Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y.
 Rapidac—See Fire Fighting Devices Co.
 U. S. Fire Extinguisher Co., Wheatling Block, Syracuse, N. Y. "Auto-Fyr."

EXTINGUISHERS, Garage Fire

(For Garage and Shop Equipment)

Acome—See Rex-Harris Fire Appliance Co. of N. Y.
 Allen Corp., 546 Greenwich St., New York, N. Y. "Pronto."
 American-La France Fire Engine Co., Elmira, N. Y. "Keystone," "Paragon."
 Atlas—See Northern Fire Apparatus Co.
 Auto-Fyr—See U. S. Fire Extinguisher Co.
 Badger Chemical Mfg. Co., 221 Grand Ave., Milwaukee, Wis., "Mitchell," "Wisconsin."
 Badger Fire Extinguisher Co., 175 Portland St., Boston, Mass.
 Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.
 Buffalo Chemical Fire Extinguisher Co., 61-69 Carroll St., Buffalo, N. Y. "Ecurusni."
 Childs Co., O. J., 133 Liberty St., Utica, N. Y. "Utica."
 Cleveland—See Fire Equipment & Marine Supply Co.
 Deluge—See Prospect Mfg. Co.
 Diener Mfg. Co., George W., 400-20 Monticello Ave., Chicago, Ill.
 Eclipse—See Haverhill Fire Appliance Co.
 Ecurusni—See Buffalo Chemical Fire Extinguisher Co.
 Ever-Ready—See Republic Chemical Fire Engine Co.
 Federal Chemical Works, 979-81 Central Ave., Minneapolis, Minn.
 Fire Equipment & Marine Supply Co., 1415 W. Ninth St., Cleveland, O. "Cleveland."
 Fire Fighting Devices Co., 70 Fifth Ave., New York, N. Y.
 Fire-Fly—See Northwestern Chemical Co.
 Fire Gun Mfg. Co., 115 Fourth Ave., New York, N. Y.
 Fire-Out Mfg. Co., 159 N. Second St., Philadelphia, Pa.
 Firex Mfg. Co., 2039 S. Morgan St., Chicago, Ill.
 Foamite Firefoam Co., 200 Fifth Ave., New York, N. Y.
 Fyr-Fyter Co., 221 Crane St., Dayton, O.
 Gammeter-Brodbeck Sales Co., 45 N. High St., Akron, O.
 General Mfg. Co., 18th & Pine Sts., St. Louis, Mo.
 Guardene—See Pyrene Mfg. Co.

Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 655.)
 Harker Mfg. Co., 121-23 W. Third St., Cincinnati, O. "Queen."
 Haverhill Fire Appliance Co., Haverhill Nat'l Bk. Bldg., Haverhill, Mass. "Eclipse."
 J-M—See Johns-Manville Co.
 J-M Success—See Johns-Manville Co.
 Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "Manville," "J-M Success," "J-M."
 Keystone—See American-La France Fire Engine Co.
 Knight & Thomas, 212 Summer St., Boston, Mass. "Presto."
 La May Mfg. Co., 80 N. Water St., Rochester, N. Y.
 Manville—See Johns-Manville Co.
 Minimax Co., 77 Beekman St., New York, N. Y.
 Mitchell—See Badger Chemical Mfg. Co.
 New York Brass Foundry Co., 102-04 Centre St., New York, N. Y.
 Northern Fire Apparatus Co., 2432 University Ave., S. E., Minneapolis, Minn. "Atlas."
 Northwestern Chemical Co., 785 State St., Marietta, O. "Fire-Fly." (See page 275.)
 Paragon—See American-La France Fire Engine Co.
 Phister Mfg. Co., 717 Sycamore St., Cincinnati, O.
 Presto—See Knight & Thomas.
 Pronto—See Allen Corp.
 Prospect Mfg. Co., Prospect, O. "Deluge."
 Pyrene Mfg. Co., 17 E. 49th St., New York, N. Y. "Guardene."
 Queen—See Harker Mfg. Co.
 Racine Iron & Wire Works, Racine, Wis.
 Regina—See Rex-Harris Fire Appliance Co. of N. Y.
 Republic Chemical Fire Engine Co., Urbana, O. "Ever-Ready."
 Rex-Harris Fire Appliance Co. of N. Y., 39 E. 19th St., New York, N. Y. "Regina," "Acme," "Victor."
 Safety Fire Extinguisher Co., 291 Seventh Ave., New York, N. Y.
 Silvers Mfg. Co., Waterloo, Ia.
 Standard Extinguisher Co., 34 Binford St. (S. Boston), Boston, Mass.
 Stempel Fire Extinguisher Co., 4250 N. 20th St., St. Louis, Mo.
 U. S. Fire Extinguisher Co., Wheatling Block, Syracuse, N. Y. "Auto-Fyr."
 U. S.—See United Mfg. Co.
 United Mfg. Co., Toledo, O. "U. S."
 Utica—See Childs Co.
 Victor—See Rex-Harris Fire Appliance Co. of N. Y.
 Wisconsin—See Badger Chemical Mfg. Co.
 Wonder Worker—See Hall-Thompson Co.

EXTRACTORS, Broken Tap

Walton Co., 304 Pearl St., Hartford, Conn.

EXTRACTORS, Bushing, for Fords

Albertson & Co (Springdale) Sioux City, Ia.
 Buffum Tool Co., Louisiana, Mo. (See page 833.)
 Conant & Donelson Co., Conway, Mass. "Reliable."
 Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)

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SHAW AUTOMOTIVE PRODUCTS

**CURTAIN FASTENERS
BALL SOCKET JOINTS
SMALL PRESSED METAL PARTS
CATALOG MAILED ON REQUEST**

SHAW MANUFACTURING CO.

**1 COLUMBIA ST.
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RADIATOR COOLING FANS

for

**Trucks, Tractors
Pleasure Cars**

PLAIN BEARING with Oil Pressure
Lubrication.

HYATT BEARING.

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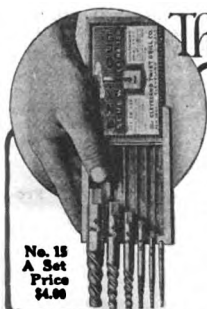
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McDougall Avenue at Wight Street
DETROIT, MICH.

At Last!
*a non-projecting fastener
flush with the side of the car.*
*The Flush Type
Fastener.*
*Write for samples
& Demonstration*

CINCH FASTENER CORP.

2339 W. Van Buren St.
CHICAGO



No. 15
A Set
Price
\$4.00

The Tool to use on Broken Screws

Three minutes' easy work removes a broken set or cap-screw,
stud, pipe fitting, cylinder bolt, etc., IF you use

EZY-OUT SCREW EXTRACTOR

WHERE TO USE IT
On any sort of broken screw, no matter
how far down in the hole it's broken off
or how tightly it's stuck. Saves retapping
and danger to neighboring surfaces.

Designed by a garageman and made by the largest makers
of twist drills and reamers, and stocked by our dealer.

THE CLEVELAND TWIST DRILL COMPANY
New York CLEVELAND Chicago

HOW TO USE IT
Just drill a hole in the broken screw, in-
sert "Ezy-Out," slap on a tap wrench and
twist—and the broken screw backs out on
its own threads.

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**EXTRACTORS, Bushing, for Fords
(Continued)**

Dyer Co., 155 Brookline St., Cambridge, Mass.
"Jiffy."

Hinckley-Myers Co., Water St., Jackson, Mich.
J & B Mfg. Co., Pittsfield, Mass.

Jiffy—See Dyer Co.

Mosco—See Motor Specialties Co.

Motor Specialties Co., Beaver St., Waltham, Mass. "Mosco."

O. K.—See West Haven Mfg. Co.

Reliable—See Conant & Donelson Co.

West Haven Mfg. Co., 32 Elm St. (West Haven), New Haven, Conn. "O. K."

EXTRACTORS, CAR—See Winches and Blocks

EXTRACTORS, Stud Bolt

Cleveland Twist Drill Co., Cleveland, O.
"Easy-out." (See page 367.)

Easy-out—See Cleveland Twist Drill Co.

Sprung Mfg. Co., E. 3316 Northwestern Ave., Detroit, Mich.

EXTRACTORS, TAP — See Extractors, Broken Tap

EYE FORMING TOOLS—See Tools, Spring Eye Forming

EYE PROTECTORS—See Goggles, Mechanics' and Welders'

EYE SHIELDS—See Goggles

EYELETS—See Grommets

EYES, SCREW—See Screw-Eyes

FABRIC BELTS—See Belts, Endless Fabric

FABRIC CLEANERS—See Cleaners, Fabric

FABRIC CLUTCH DISCS—See Lining Brake

FABRIC, Cotton Tire

Atlas Mfg. Co.—See Brander & Curry.

Bay State Cotton Corp.—See Turner Co.

Bibb Mfg. Co., Macon, Ga.

Brander & Curry, 30 E. 42d St., New York, N. Y. (Sole Distributors for Fitchburg Duck Mills, Fitchburg, Mass., and Atlas Mfg. Co., Bessemer City, N. C.)

Brighton Mills, Brighton & Manhattan Aves., Passaic, N. J.

Caldwell Co., R. J., 15 Park Row, New York, N. Y.

Catlin & Co., 345 Broadway, New York, N. Y.

Connecticut Mills Co., Danielson, Conn.

Fitchburg Duck Mills—See Brander & Curry.

Jenckes Spinning Co., Pawtucket, R. I.

Lane & Co., J. H., 334 Fourth Ave., New York, N. Y. (Sole Selling Agents for West Boylston Mfg. Co., East Hampton, Mass.)

Manhasset Mfg. Co., Turks Head Bldg., Providence, R. I.

Marlboro Cotton Mills, McColl, S. C.

Meyer Tire Duck Co., John H., 708 Frelinghuysen Ave., Newark, N. J.

Salmon Falls Mfg. Co., 50 State St., Boston, Mass.

Sears & Co., Wellington, 93 Franklin St., Boston, Mass.

Taylor, Armitage & Co., 120 Broadway, New York, N. Y.

Turner Co., J. Spencer, 56 Worth St., New York, N. Y. (Sole Distributors for Bay State Cotton Corp., Boston, Mass.)

West Boylston Mfg. Co.—See Lane & Co.

FABRIC DOOR PROTECTORS—See Protectors, Door

FABRIC FAN BELTS—See Belts, Endless Fabric

FABRIC GEARS—See Gears and Pinions Rawhide, Fibre and Fabric

FABRIC RADIATOR LINING—See Lining, Fabric Radiator

FABRIC SPEEDOMETER PINIONS—See Gears and Pinions, Speedometer

FABRIC UNIVERSAL JOINT DISCS—See Discs, Universal Joint

FABRICS, UPHOLSTERY AND TOP—See Cloth; also Broadcloth; also Silk; also Whipcord

FACINGS, BRAKE—See Lining, Brake

FACINGS, CLUTCH—See Lining, Brake; also Leather, Friction

FACINGS, FRICTION—See Frictions, Fibre

FACINGS, TRANSMISSION, FOR FORDS—See Lining, Brake

FAN BELT ADJUSTERS FOR FORDS—See Adjusters, Fan Belt

FAN BELT GUIDES—See Guides, Fan Belt

FAN BELTS—See Belts, Spiral Wire; also Belts, Endless Fabric; also Belting, Leather

FAN BELTS FOR FORDS—See Belts, Fan

FAN PULLEYS—See Pulleys, Pressed Steel

FANS, Electric

(For closed cars)

Knapp Electric & Novelty Co., 511 W. 51st St., New York, N. Y.

FANS, Radiator

(See also Radiators)

Automotive Parts Co., Massachusetts Ave. & Fan St., Indianapolis, Ind. "Hy-Duty." (See page 369.)

Buffalo Pressed Steel Co., Buffalo, N. Y.

Cope-Swift Co., McDougall Ave. & Wight St., Detroit, Mich. (See page 367.)

Detroit Carrier & Mfg. Co., Detroit, Mich. (See page 373.)

Halvorsen-Rossco—See U. S. Products Corp.
Hardy Mfg. Co., Pendleton, Ind. (See page 369.)

Hots Foundry & Mfg. Co., Wolf Ave., Fremont, O.

Hy-Duty—See Automotive Parts Co.

Konigslow Mfg. Co., Otto E., 3501 Perkins Ave., Cleveland, O.

Oakes Co., Indianapolis, Ind.

(See page 369.)

Pitter Fan Co., 208 S. LaSalle St., Chicago, Ill.

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Automotive Products

Radiator Fans

Oakes Fans are used by over 250 builders of cars, trucks and tractors. They embody right design, dependable bearings, light weight, utmost cooling capacity and long service. Send your specifications for quotation.

Spare Tire Lock

Oakes Spare Tire Locks baffle tire thieves. Only two main parts—circular casting of malleable iron—lock goes in one end, other end fits on bolt on carrier. Made in several styles—one for Fords. A real lock at low cost.

Tire Carriers

Oakes Tire Carrier is three-arm type—strong, light, durable, distinctive. Made in single or double styles. Constructed of high grade pressed steel. Get prices. Oakes Tire Lock is optional on carrier.

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Oakes Spare Wheel Lock for disc or wire wheels. Housing is polished aluminum alloy casting, with two wing arms. Lock approved by underwriters' laboratories. Combines beauty and safety. Get prices.

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HARDY FANS

FOR

Cars :: Trucks :: Tractors

Hardy Fans are light, strong, durable and silent. They use a minimum of power yet produce a volume of air that permits of maximum radiator efficiency.

Hardy Fans are designed and built with the desire to maintain an even balance of quality, workmanship and results

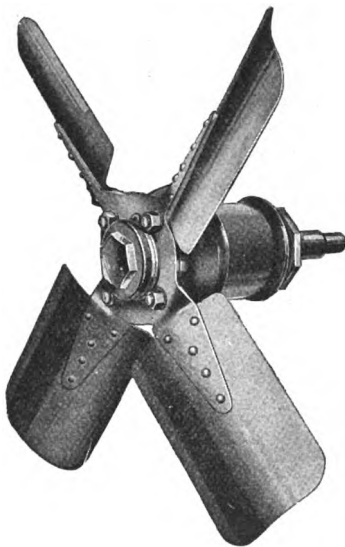
Send us your blue prints and engine designs and we will quote you.

"Hardy Fans are Better"
"Hardy Prices are Lower"

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HARDY MANUFACTURING COMPANY
PENDLETON, INDIANA

Hy Duty Fans



Designs for all standard motors and installations.

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Our Engineers, experts on cooling problems, are at your service for correct design of cooling fans to insure maximum efficiency under specific conditions.

Deliveries as specified.

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INDIANAPOLIS U. S. A.

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FANS, Radiator (Continued)

Service Products Corp., 355 S. Rural St., Indianapolis, Ind.
 Sparks-Withington Co., Jackson, Mich. "Sparton."
 Sparton—See Sparks-Withington Co.
 Spencer Metal Products Co., Spencer, O.
 Standard Tool & Mfg. Co., 512-24 E. Lafayette Blvd., Detroit, Mich.
 (See page 579.)
 U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen-Roscoe."

FANS, Radiator, for Fords

Allied Steel Products Co., 7 Walnut St., Aurora, Ill.
 American Aero Co., So. Bend, Ind. "Juelson."
 Ashland Products Co., 50 E. Ninth St., Ashland, O. "Wind Jammer."
 (See page 487.)
 Automotive Parts Co., Massachusetts Ave. & Fan St., Indianapolis, Ind. "Hy-Duty."
 (See page 369.)
 Danham Co., Thos., Aurora, Ill.
 (See page 145.)
 Gennette Reverse Motor Fan Co., Aurora, Kans.
 Hots Foundry & Mfg. Co., Wolf Ave., Fremont, O.
 Hy-Duty—See Automotive Parts Co.
 Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 Juelson—See American Aero Co.
 No-Riv—See Strong Metal Products Co.
 Spencer Metal Products Co., Spencer, O.
 Strong Metal Products Co., H. M., 1011-51 Power Ave., Cleveland, O. "No-Riv."
 U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen-Roscoe."
 Wind Jammer—See Ashland Products Co.
 Wizzard Fan Co., 2316 Riverside Ave., Minneapolis, Minn.

FANS, Tractor Radiator

Automotive Parts Co., Massachusetts Ave. & Fan St., Indianapolis, Ind. "Hy-Duty."
 (See page 369.)
 Hots Foundry & Mfg. Co., Wolf Ave., Fremont, O.
 Hy-Duty—See Automotive Parts Co.
 Oakes Co., Indianapolis, Ind.
 (See page 369.)
 Service Products Corp., 355 S. Rural St., Indianapolis, Ind.
 Sparks-Withington Co., Jackson, Mich.
 U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen-Roscoe."

FARM LIGHTING PLANTS—See Plants, Farm Lighting

FASTENERS, Belt

Alligator—See Flexible Steel Lacing Co.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. "Conn." (See page 247.)
 Ballard-Sutcliffe Co., 537 Turk St., San Francisco, Cal. "W. W."
 Blakes—See Greene, Tweed & Co.
 Campbell—See Perkins-Campbell Co.
 Clipper Belt Lacer Co., 1043 Front Ave., N. W. Grand Rapids, Mich.
 Conn—See Asch and Co., Inc.
 Crescent Belt Fastener Co., 381 Fourth Ave., New York, N. Y.
 Eagle—See Manufacturers' Belt Hook Co.

Flexible Steel Lacing Co., 4607-31 Lexington St., Chicago, Ill. "Alligator."
 Greene, Tweed & Co., 109 Duane St., New York, N. Y. "Blakes," "Morans."
 Handy Products Co., Erie Bldg., Cleveland, O.
 Lakewood—See McMonies, J. R.
 Lakewood Fabric Belting & Mfg. Co., 1516 Highland Ave., Lakewood, O.
 McMonies, J. R., 1911 N. Dakota St., Spokane, Wash. "Lakewood."

Manufacturers' Belt Hook Co., 1321 W. Congress St., Chicago, Ill. "Eagle."
 Morans—See Greene, Tweed & Co.
 Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, O.
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)
 Powers Mfg. Co., Waterloo, Iowa.
 (See page 530.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
 Standard Motor Products Mfg. Corp., 908 W. Chicago Ave., Chicago, Ill.
 W. W.—See Ballard-Sutcliffe Co.

FASTENERS, BOW—See Holders, Top Bow
FASTENERS, BOW, FOR FORDS—See Clamps, Top Bow

FASTENERS, BOX—See Catches, Spring

FASTENERS, CHAIN—See Fasteners, Tire Chain

FASTENERS, Curtain

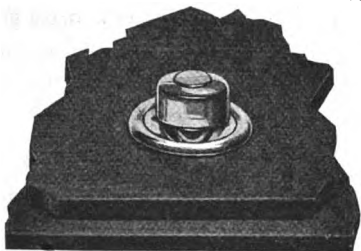
Acme—See Scovill Mfg. Co.
 Ajax—See Metal Stamping Co.
 Anzo Dot—See Carr Fastener Co.
 Arkin Fastener Co., East Candia, N. H. "Arklok."
 Arklok—See Arkin Fastener Co.
 Boston Fastener Co., 641-43 Atlantic Ave., Boston, Mass. "Push & Pull."
 Brewer-Tichener Corp., Cortland, N. Y.
 Brewster—See Cowles & Co.
 Burco—See Murphy Co.
 Carr Fastener Co., Boston, Mass. "Durable Dot," "Common Sense," "Lift the Dot," "Veltex Dot," "Anso Dot."
 (See page 371.)
 Cinch Fastener Corp., 2339 W. Van Buren St., Chicago, Ill. (See page 367.)
 Common Sense—See Carr Fastener Co.
 Cowles & Co., C., New Haven, Conn. "Brewster," "Ideal," "Perfect," "Success." (See page 451.)
 Desoco—See Detroit Socket Co.
 Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
 Durable Dot—See Carr Fastener Co.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Federal Equipment Co., Union St., Marietta, O.
 Ideal—See Cowles & Co.
 Jarvis Co., Charles L., Gildersleeve, Conn.
 Jonas & George, Little's Ct., Merrimac, Mass.
 Kentucky—See Nelder Co.
 Leader—See Nelder Co.
 Lift the dot—See Carr Fastener Co.
 Metal Stamping Co., Long Island City, N. Y. "Perfecto," "Standard," "Ajax."
 (See page 168.)
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O.
 (See page 929.)
 Murphy Co., G. W. J., Carriage Ave., Amesbury, Mass. "Burco."
 (See page 371.)

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Hamilton, Ontario

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FASTENERS, Curtain (Continued)

Nelder Co., F. A., Augusta, Ky. "Peerless," "Leader," "Kentucky."
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Perfection."
 Novelty Mfg. Co., 125 Maple St., Waterbury, Conn. "Stronghold."
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Peerless—See Nelder Co.
 Perfect—See Cowles & Co.
 Perfection—See North & Judd Mfg. Co.
 Perfecto—See Metal Stamping Co.
 Push & Pull—See Boston Fastener Co.
 Reliable—See Smith & Co.
 Roehm & Davison, 353 W. Woodbridge St., Detroit, Mich.
 Seovill Mfg. Co., Waterbury, Conn. "Acme." (See page 745.)
 Shaw Mfg. Co., 1 Columbia St., Lynn, Mass. (See page 367.)
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Reliable."
 Soss Mfg. Co., Grand Ave., & Bergen St., Brooklyn, N. Y.
 Standard—See Metal Stamping Co.
 Strong Co., M. H., 163 South Ave., Rochester, N. Y.
 Stronghold—See Novelty Mfg. Co.
 Success—See Cowles & Co.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 United States Fastener Co., 95 Milk St., Boston, Mass.
 Veltex Dot—See Carr Fastener Co.

FASTENERS, Hood

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
 Anchor—See North & Judd Mfg. Co.
 Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
 Bassick Co., Bridgeport, Conn. (See page 311.)
 Columbus Auto Parts Co., 215 E. Russell St., Columbus, O.
 Columbus Brass Co., 540 Dublin Ave., Columbus, O.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 540.)
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, Ohio.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See page 167.)
 Graham & Co., James, 293 Wooster St., New Haven, Conn.
 Greer, Fredric, 2437 Michigan Ave., Chicago, Ill.
 Holt-On—See Holton Hood Clip Co.
 Holton Hood Clip Co., 513 Shelby St., Detroit, Mich. "Holt-On."
 Hunt & Co., E. J., Dayton O. (Sales Representatives for Thomson Mfg. Co., S. H., Dayton, O.)
 Ideal Brass Works, 566 N. Elder Ave., Indianapolis, Ind.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Medina Stamping & Machine Co., 317 Main St., Medina, N. Y.
 Meyer Scale & Hardware Co., 328 Adams St., Newark, N. J.
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 929.)
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
 Pfau Mfg. Co., Cincinnati, O.
 Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.
 Rostand Mfg. Co., Milford, Conn.
 Sergeant Mfg. Co., New & Summit Sts., Newark, N. J.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Specialty Products Co., 286 South St., Newark, N. J.
 Sterling Bronze Co., 201 E. 12th St., New York, N. Y.
 Stewart Mfg. Co., Oakland, Cal. (See page 373.)
 Thomson Mfg. Co.—See Hunt & Co.
 United Motors Co., 675 North St., N. W., Grand Rapids, Mich.
 Wagner Mfg. Co., E. R., North Milwaukee, Wis.
 Wemsco—See Western Metal Specialty Co.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)
 Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemsco."
 White Products Co., 18 W. 55th St., Chicago, Ill. (See page 543.)

FASTENERS, GATE—See Fasteners, Truck Body Gate**FASTENERS, HOOD, FOR FORDS—See Clamps, Hood****FASTENERS, STORAGE BATTERY HOLDING DOWN—See Clamps, Storage Battery Holding Down****FASTENERS, Tire Chain**

Clamert Mfg. Co., Latrobe, Pa.
 Cross Chain Fastener Co., Rose Bldg., Cleveland, O. "Q. D."
 Eysitt Sales Co., 53-62 Congress Ave., New Haven, Conn.
 Faus, Jr., Jacob, 1917 12th St., Boulder, Colo.
 Frey, 497 Ellicott St., Buffalo, N. Y.
 Q. D.—See Cross Chain Fastener Co.

FASTENERS, Top

(Fastener or Clamp to hold top to windshield)
 Autom—See Auto Moulding & Mfg. Co.
 Auto Moulding & Mfg. Co., 1926-28 S. Wabash Ave., Chicago, Ill. "Autom."
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See page 167.)

FASTENERS, Top for Fords

(Fastener or Clamp to Hold Windshield)
 American Forging & Socket Co., Pontiac, Mich. "Pontiac." (See page 387.)
 Pontiac—See American Forging & Socket Co.
 Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.

FASTENERS, Truck Body Gate

Grip-Lok—See Reese Mfg. Co.
 Reese Mfg. Co., Ford Bldg., Detroit, Mich. "Grip-Lok."

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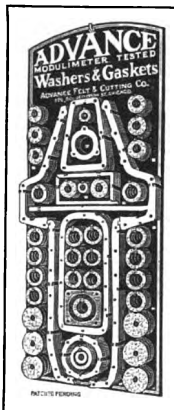
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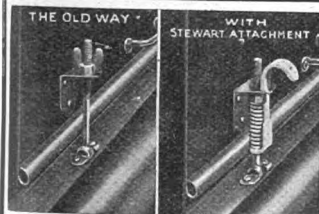
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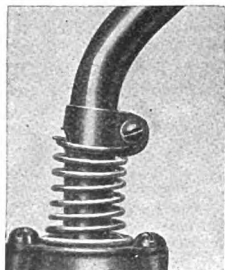
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FEED SYSTEMS, GASOLINE—See *Systems, Gasoline Feed*; also *Tanks, Vacuum*; also *Regulators, Tank Pressure*

FEEDERS, WATER—See *Moisteners, Air*

FELLOES, WOOD—See *Rims, Wood*

FELT GASKETS—See *Washers, Felt*

FELT GASKETS FOR FORDS—See *Gaskets, Felt*

FELT LUBRICATOR WICKING — See *Wicking, Felt Lubricator*

FELT, Sheet

(For *Felt Washers or Gaskets*—See *Washers, Felt*)

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 373.)

American Felt Co., 100 Summer St., Boston, Mass. (See page 373.)

Bacon Felt Co., Winchester, Mass.

Booth Felt Co., 403-73 19th St., Brooklyn, N. Y. (See page 376.)

Brawley, T. R., 272-74 20th St., Brooklyn, N. Y. (See pages 375 and 935.)

Commonwealth Felt Co., 76 Summer St., Boston, Mass.

Eastern Felt Co., Canal St., Winchester, Mass.
Jenks & Muir Mfg. Co., 6441 Hastings St., Detroit, Mich.

Lowell Felt Co., 48 Warren St., Lowell, Mass.
Rhocom—See *Rhodes & Co.*

Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Rhocom."

Stroock & Co., S., 11-13 E. 26th St., New York, N. Y.

Sutherland Leather & Felt Co., 743 Beaubien St., Detroit, Mich.

Western Felt Works, 4031-4115 Ogden Ave., Chicago, Ill.

FELT TESTING INSTRUMENTS—See *Instruments, Rubber and Felt Testing*

FELT, Upholstery

(For use in place of hair or moss; for *Hair*—See *Hair Upholstery*; for *Moss*—See *Moss, Upholstery*)

Detroit Felt Co., 3297 Hubbard St., Detroit, Mich.

Newark Hair Felt Co., Eighth St. & Maple Ave., Lansdale, Pa.

Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.

Textile By-Products Corp., 149 Church St., New York, N. Y.

FELT WASHERS—See *Washers, Felt*

FELT WASHERS FOR FORDS—See *Gaskets, Felt*

FENDER BRACES FOR FORDS—See *Braces, Mud Guard*

FENDER CLAMPS FOR FORDS—See *Braces, Mud Guard*

FENDER COVERS—See *Covers, Fender*

FENDER PROTECTORS—See *Covers, Fender*

FENDER ROLLING MACHINES—See *Machines, Fender Rolling*

FENDER STRAIGHTENING TOOLS — See *Tools, Fender Straightening*

FENDER WIRING MACHINES—See *Machines, Fender Wiring*

FENDERS, Automobile

(*Safety Devices for front of car; see also Bumpers, Automobile*)

Burns Co., W. P., 109 N. Dearborn St., Chicago, Ill.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)

Hersh & Bro., 657 Mill St., Allentown, Pa.

International Sav-A-Life Fender Co., Guardian Bldg., Cleveland, O.

Jackson Metal Products Co., 601-15 Liberty St., Jackson, Mich.

Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

Monarch Radiator & Fender Works, 632-38 Ellis St., San Francisco, Cal.

Pandolfo Mfg. Co., St. Cloud, Minn.

Safety First Appliance Co., Woodward Bldg., Washington, D. C.

FENDERS or MUD GUARDS, Leather

McKinnon Dash Co., Buffalo, N. Y. (See page 686.)

FENDERS or MUD GUARDS, Metal

A. B. & B. Sheet Metal Works, 2200-02 Fond du Lac Ave., Milwaukee, Wis.

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y.

American Motor Body Co., 1800 Lehigh Ave. W., Philadelphia, Pa.

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill.

Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich. "Maco."

Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave. S. W., Grand Rapids, Mich.

Brummeler's Sons Co., Wm., 413 Ionia Ave. S. W., Grand Rapids, Mich. "Brusco."

Brusco—See *Brummeler's Sons Co.*

Bush Mfg. Co., Hartford, Conn. (See page 683.)

Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.

Clayton & Lambert Mfg. Co., 10507 Knodell Ave., Detroit, Mich. (See page 471.)

Clayton's Sons, Frank B., 1227-33 N. 11th St., Philadelphia, Pa.

Columbus Auto Brass Co., Columbus, O. (See page 381.)

Cornwall Mfg. Co., Cleveland, O. (See page 845.)

Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.

Fostoria Pressed Steel Co., Fostoria, O. (See page 377.)

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

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Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept D., Cincinnati, O. "Lawco." (See page 377.)
 Lima Sheet Metal Products Co., 308 E. Wayne St., Lima, O.
 Maco—See Automotive Sheet Metal Co.
 Martin Metal Mfg. Co., Wichita, Kans.
 Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
 Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
 Michigan Stamping Co., 3171 Bellevue Ave., Detroit, Mich.
 Moline Pressed Steel Co., Fifth St., East Moline, Ill.
 Motorcraft Engineering Co., 2270 Franklin St., Detroit, Mich. (Dealers.) (See page 731.)
 Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
 Mullins Body Corp., 182 Franklin Ave., Salem, O.
 Murray Auto Parts Mfg. Co., Atlanta, Ga.
 Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
 Paragon Auto-Parts Mfg. Co., 506 W. 53d St., New York, N. Y.
 Peacock Radiator Guard Co., 275 Jefferson Ave., E., Detroit, Mich.
 Perfex Radiator Co., Racine, Wis.
 Phillips & Co., H., 904-10 Evans St., Cincinnati, O.
 S. J.—See Shotwell-Johnson.
 Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.
 Sargeant Mfg. Co., New & Summit Sts., Newark, N. J.
 Shotwell-Johnson, 712-22 Ontario Ave., N., Minneapolis, Minn. "S-J."
 Standard Auto Radiator Co., 244 W. 53d St., New York, N. Y.
 Stewart Iron Works Co., 17th St. & Madison Ave., Covington, Ky.
 Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal.
 Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
 Wemsco—See Western Metal Specialty Co.
 Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemsco."
 Western Radiator & Fender Mfg. Co., 1430 Bush St., San Francisco, Cal.
 Wilson & Bowen, 1818 S. Main St., Los Angeles, Cal.
 York Corrugating Co., York, Pa. (See page 377.)

FENDERS or MUD GUARDS, Wood

Dann Bros. & Co., 84 Franklin St., New Haven, Conn.

FENDERS or MUD GUARDS, for Fords

(Including both standard and special crown fenders)

A. B. & B. Sheet Metal Works, 3800-02 Fond du Lac Ave., Milwaukee, Wis.
 American Motor Body Co., 1800 Lehigh Ave. W., Philadelphia, Pa.
 Blitwell Accessories Co., 401 E. 23rd St., New York, N. Y.

Black Crown—See Murray Auto Parts Mfg. Co.

Columbus Auto Brass Co., Columbus, O. (See page 381.)

Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O. "Peerless."

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Lawco—See Lawson Co.

Lawson Co., F. H., Dept D., Cincinnati, O., "Lawco." (See page 377.)

Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich. "Superior."

Murray Auto Parts Mfg. Co., Atlanta, Ga. "Black Crown."

Peacock Radiator Guard Co., 275 Jefferson Ave., E., Detroit, Mich.

Peerless—See Corcoran Mfg. Co.

Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.

Superior—See Motors Metal Mfg. Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

York Corrugating Co., York, Pa. (See page 377.)

FENDERS or MUD GUARDS, Tractor

Brumac—See Bruun-McClure Co.

Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.

Bruun-McClure Co., 311 Cleveland Ave., Columbus, O. "Brumac."

Bull Dog—See Thomas Mfg. Co.

Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.

Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.

Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 471.)

Columbian Steel Tank Co., 1519-1625 W. 12th St., Kansas City, Mo. (See page 849.)

Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O.

Derby Coppersmithing & Sheet Metal Contracting Co., Derby, Conn.

Duro—See Fouts Co.

Fouts Co., C. C., Woodlawn & B. & O. Ry., Middletown, O. "Duro."

Hersh & Bro. 657 Mill St., Allentown, Pa.

Hughes & Curren Co., 45 Halstead St., Rochester, N. Y. "Motoline."

Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.

Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.

Made-O-Metal—See Pandolfo Mfg. Co.

Moore Mfg. Co., Concrete & Water Sts., Waterloo, Iowa.

Motoline—See Hughes & Curren Co.

Otwell Tractor Equipment Co., 6538 Livernols Ave., Detroit, Mich.

Pandolfo Mfg. Co., St. Cloud, Minn. "Made-O-Metal."

S-W-S Co., Minneapolis, Minn. (See page 431.)

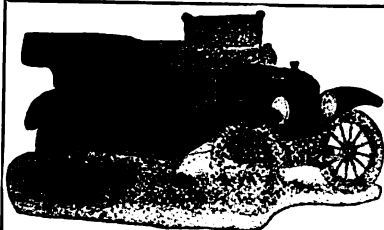
Thomas Mfg. Co., W. H., Spencer, Ia. "Bull Dog." (See page 572.)

Wels Mfg. Co., Henry, Atchison, Kans. "Wels-teel."

Welsteel—See Wels Mfg. Co.

York Corrugating Co., York, Pa. (See page 377.)

Everything is listed under the NOUN or principal word



Fenders,

Running Boards,

Running Board Shields,

Hoods,

Radiators,

Radiator Shells,

Mufflers,

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FENDERS or GUARDS, Truck Radiator

Atlantic Welding Works, 30th & Callowhill Sts., Philadelphia, Pa. "Armweid."

Armweid—See Atlantic Welding Works.

Bell Safety Bumper Co., Bush Terminal Bldg. No. 8, Brooklyn, N. Y. (See page 168.)

Cochran Piston Corp., Moffatt Bldg., Detroit, Mich.

Fundamental Corp., 270 Union Ave., Brooklyn, N. Y. "Warman."

Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y.

Irving Iron Works Co., Long Island City, N. Y.

Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.

Mason & Co., F. C., St. Johns, Mich.

Michaels & Mourre, 344 Amsterdam Ave., New York, N. Y.

Sheet Steel Products Co., Bryan, O.

Warman—See Fundamental Corp.

FENDERS or GUARDS, Truck Radiator for Fords

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.

Lawco—See Lawson Co.

Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 377.)

FERRO MOLYBDENUM—See Molybdenum, Ferro**FIBRE CLEATS—See Cleats, Fibre****FIBRE GEARS—See Gears, Rawhide, Fibre and Fabric****FIBRE, Hard**

(Sheet, Rod and Tube)

American Vulcanized Fibre Co. Equitable Bldg., Wilmington, Del. "Vul-Cot."

Brandywine Fibre Products Co., 1406 Walnut St., Wilmington, Del. (See page 908.)

Continental Fibre Co., Newark, Del. (See page 379.)

Delaware Hard Fibre Co., Wilmington, Del. (See page 379.)

Diamond F—See Diamond State Fibre Co.

Diamond State Fibre Co., Bridgeport, Pa. "Diamond F."

Fibre Specialty Mfg. Co., Kennett Sq., Pa.

Keystone Fibre Co., Yorklyn, Del.

National Fibre & Insulation Co., Box 287, Yorklyn, Del. "S-S." (See page 381.)

S-S—See National Fibre & Insulation Co.

Spaulding & Sons Co., J., Wheeler St., Tonawanda, N. Y.

Standard Fibre Co., 11-15 Miller St., Somerville, Mass.

Vul-Cot—See American Vulcanized Fibre Co. Wilmington Fibre Specialty Co., Wilmington, Del. (See page 379.)

FIBRE PINIONS—See Gears and Pinions, Fibre and Fabric**FIBRE TUBE—See Fibre, Hard****FIBROUS GASKETS—See Gaskets, Fibrous for Fords****FIELD COIL WINDINGS—See Windings, Starter and Ignition****FIFTH WHEELS—See Wheels, Fifth****FILES and RASPS**

Akron File Co., 1008 Grant St., Akron, O.

American Swiss File & Tool Co., 24 John St., New York, N. Y.

Barnett Co., G. & H., 1078 Franklin Ave., Philadelphia, Pa. "Black Diamond."

Black Diamond—See Barnett Co.

Chatterton File Works, 38 Randall St., Providence, R. I.

Chelsea File Works, Sherman St., Norwich, Conn.

Colonial File Co., 167-70 Tenean St., Neponset, Mass. "Furitan."

Delta File Works, 3237 Frankford Ave., Philadelphia, Pa.

Disston & Sons, H., Tacony, Philadelphia, Pa.

Gem City File Works Co., 1120-24 Broadway, Quincy, Ill.

Gold Medal File Co., 20th St. & Allegheny Ave., Philadelphia, Pa.

Graves File Co., 67 N. J. R. R. Ave., Newark, N. J.

Grobet—See Montgomery & Co.

Hayes File Co., 1980 Franklin St., Detroit, Mich.

Heller Bros. Co., 365 Mt. Prospect Ave., Newark, N. J.

Johnson & Bro., 603 Summer St., Newark, N. J. "Reliance."

McCaffrey File Co., Fifth & Berks Sts., Philadelphia, Pa.

Madden & Morrison File Co., 76-78 Dolsen Ave., Middletown, N. Y.

Montgomery & Co., 105-07 Fulton St., New York, N. Y. (Importers) "Grobet."

Murcott & Campbell, 296-300 Union Ave., Brooklyn, N. Y.

Nicholson File Co., 23 Acorn St., Providence, R. I. "Superior," "Spark."

Puritan—See Colonial File Co.

Reliance—See Johnson & Bro.

Rex File & Saw Co., New Comertown, O.

Reynolds Bros., 136 N. Water St., Columbus, O.

Simonds Mfg. Co., 470 Main St., Fitchburg, Mass.

Spark—See Nicholson File Co.

Superior—See Nicholson File Co.

Trojan—See Troy File Works.

Troy File Works, Congress St., Troy, N. Y. "Trojan."

Westphal File Co., 467 31st St., Milwaukee, Wis.

Whitaker Mfg. Co., Chicago, Ill.

(See page 311.)

FILLERS, Automatic Storage Battery

(Tank and special valves to attach to car for supplying water to the battery automatically; for Storage Battery Syringes—See Hydrometers)

Genco—See General Scientific Equipment Co. General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Huntco—See Hunter Corp.

Hunter Corp., John, 108 Cayuga St., Fulton, N. Y. "Huntco."

Luthy Hydrometer Co., 97 Woodward Ave., Detroit, Mich.

Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.

Shontz Co., H. B., Dept. C., 101 W. 64th St., New York, N. Y. (New York, New Jersey and Connecticut Distributors for "Huntco" Fillers. (See page 151.)

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Detroit, Mich.....	1002 Ford Bldg.
Los Angeles, Cal.....	4th and Main, San Fernando Bldg.
Montreal, Canada.....	151-135 Youville Square
New York City.....	36 Warren Street
Philadelphia, Pa.....	Bourse Bldg.
Pittsburgh, Pa.....	209 Alpine Ave.
Portland, Ore.....	Corbett Bldg.
Salt Lake City, Utah.....	1015 New House Bldg.
San Francisco, Cal.....	Atlas Bldg., 604 Mission St.
Seattle, Wash.....	2118 Smith Bldg.
St. Louis, Mo.....	604 Federal Reserve Bank Bldg.
Home Office.....	Wilmington, Del.

**WILMINGTON FIBRE
SPECIALTY CO.**

Wilmington, Delaware

Please mention The Automobile Trade Directory

FILLERS, BATTERY—See Fillers, Automatic Storage Battery

FILLERS, GREASE GUN—See Loaders, Grease Gun

FILLERS, Paint

Acme White Lead & Color Works, 3250 St. Aubin Ave., Detroit, Mich.

Berry Bros., 211 Lieb St., Detroit, Mich. "Lionoil."

Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "C. Q. P."

Bridgeport Wood Finishing Co., New Milford, Conn. "Wheelers."

C. Q. P.—See Bradley & Vrooman Co.

Celox.—See Valentine & Co.

Chase, Roberts & Co., Fifth St. & West Ave., Long Island City, N. Y.

Chicago Varnish Co., 2100 Elston Ave., Chicago, Ill. "Chi-Var-Co."

Chi-Var-Co.—See Chicago Varnish Co.

Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers."

Dibble Color Co., 445 Larned St., W., Detroit, Mich.

Ditzler Color Co., 40 W. Baltimore Ave., Detroit, Mich.

Esco.—See Smith & Co.

Flood & Conklin Co., 136 Chestnut St., Newark, N. J.

Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.

Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.

Graves Co., N. Z., 22-26 S. Third St., Philadelphia, Pa.

Hildreth Varnish Co., 90 West St., New York, N. Y.

Johnston Paint Co., R. F. Pearl & Main Sts., Cincinnati, O. "Krakno."

Keystone Paint & Filler Co., Muncy, Pa.

Krakno.—See Johnston Paint Co.

Lionoil.—See Berry Bros.

Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.

Moser Co., Chas., 215-27 E. Ninth St., Cincinnati, O.

Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J.

Nice, Eugene E., 268-74 S. Second St., Philadelphia, Pa.

O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.

Phoenix Paint & Varnish Co., 124 Market St., Philadelphia, Pa.

Reno Bros. Paint Co., Pulaski, Pa.

Rogers.—See Detroit White Lead Works.

St. Louis Surfacers & Paint Co., Arlington Ave. & Terminal Belt Line, St. Louis, Mo.

Schrack & Co., 152 N. Fourth St., Philadelphia, Pa.

Smith & Co., Edward, Sixth St. & West Ave., Long Island City, N. Y. "Esco."

Valentine & Co., 456 Fourth Ave., New York, N. Y. "Celox."

Wheelers.—See Bridgeport Wood Finishing Co.

FILLERS, TIRE—See Compounds, Tire Filling

FILLERS, Tire Bead

(A ring applied on a quick detachable type of tire to permit applying on a straight side rim)

Rubber City Clearing House Co., 1133-35 S. High St., Akron, O.

FILLING COMPOUNDS—See Compounds, Tire Filling

FILLING TUBES—See Tubes, Non-Explosive Tank Filling

FILTERS, GASOLINE—See Strainers or Separators, Gasoline

FILTERS, Oil

Bousman Mfg. Co., 1157 Plainfield Ave., N. E., Grand Rapids, Mich. "Perfect."

Perfect.—See Bousman Mfg. Co.

FILTERS AND CLARIFIERS, CENTRIFUGAL—See Separators, Oil

FIN STRAIGHTENING TOOLS FOR FORDS—See Tools, Radiator Fin Straightening

FIN TWISTERS FOR FORDS—See Tools, Radiator Fin Straightening

FINANCIAL BROKERS—See Brokers, Financial

FINISHING WASHERS—See Washers, Finishing

FINS, RADIATOR—See Discs, Radiator

FIRE EXTINGUISHERS—See Extinguishers, Garage Fire; also Extinguishers, Automobile Fire

FIRE POTS—See Furnaces, Soldering

FIRE TUBE BOILERS—See Boilers

FIRST AID CABINETS—See Cases, Medical Emergency

FIRST AID CASES—See Cases, Medical Emergency

FIRST AID KITS—See Cases, Medical Emergency

FITTINGS, Car Lowering, for Fords

Craig-Hunt.—See Speedway Engineering Co.

Domelco.—See Dominick & Co.

Dominick & Co., Wm., 2220 Indiana Ave., Chicago, Ill. "Domelco."

Ford Speed-Power Equipment Mfrs., O. T., 250 W. 54th St., New York, N. Y.

Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.

Morton & Brett, 311-15 E. 23rd St., Indianapolis, Ind.

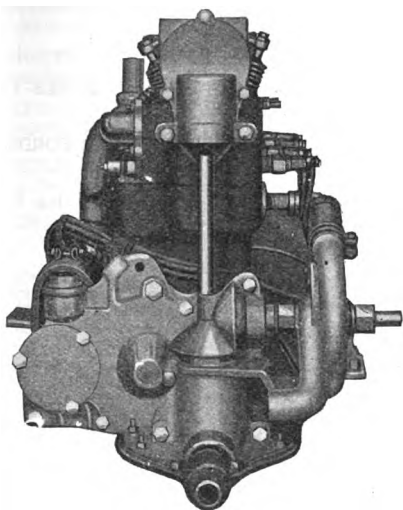
Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt."

(See page 381.)

FITTINGS, COMPRESSION—See Unions, Tubing

FITTINGS, CURTAIN OPENING—See Openers, Curtain

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Havana, Cuba; London, England.
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Ltd., Toronto.

FITTINGS, Pipe*(For Tubing or Brazing Fittings—See Tubing Unions)*

- Belfield Co., H., 435 N. Broad St., Philadelphia, Pa.
 Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.
 Crane Co., 834 S. Michigan Ave., Chicago, Ill.
 Detroit Brass & Malleable Works, 1177 Holden Ave., Detroit, Mich.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Jarecki Mfg. Co., 149 E. Ninth St., Erie, Pa.
 Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
 Kelly & Jones Co., Greensburg, Pa.
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
 McDonald Mfg. Co., A. Y., 12th & Pine Sts., Dubuque, Ia.
 McNab & Harlin Mfg. Co., 55 John St., New York, N. Y.
 McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
 Michigan Lubricator Co., 3643 Beaubien St., Detroit, Mich.
 Pittsburg Valve & Fittings Co., Barberton, O.
 Powhatan Brass & Iron Works, Ransom, W. Va.
 Richardson-Phenix Co., 122-28 Reservoir Ave., Milwaukee, Wis.
 Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
 Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 853.)
 Ware Coupling & Nipple Co., Ware, Mass.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)

FITTINGS, SOLDERLESS—See Unions, Tubing**FITTINGS, TUBING—See Unions, Tubing****FITTINGS, UNDERSLUNG FOR FORDS—See Fittings, Car Lowering****FITTINGS and FIXTURES, Top***(See also Bows, Top; also Fasteners, Curtain; also Irons, Slat; also Irons, Top; also Racks, Bow; also Separators, Bow; also Sockets, Bow; also Straps, Top)*

- Amesbury Brass & Foundry Co., Amesbury, Mass.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 929.)
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)

FIXTURES—See Dies, Jigs, Tools and Fixtures.**FIXTURES, Magneto Aligning and Testing for Fords**

Hickley-Myers Co., Water St., Jackson, Mich.

FIXTURES, TOP—See Fittings and Fixtures, Top**FIXTURES, UNDERSLUNG FOR FORDS—See Fittings, Car Lowering****FLAG HOLDERS—See Holders, Flag, Pennant and Emblem****FLAGS, PENNANTS and EMBLEMS***(See also Ornaments, Radiator; for Flag Holders—See Holders, Flag)*

- American Art Production Co., 58-60 Walton St., Brooklyn, N. Y.
 Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.
 Bloom Bros. Co., 422-30 First Ave., N., Minneapolis, Minn.
 Freyberg, G. H. & E., 160 Fifth Ave., New York, N. Y.
 Hunt & Co., E. J., Dayton, O. (Sales Representatives for Thomson Mfg. Co., S. H., Dayton, O.)
 Kosmos-Art Co., 120 E. Sixth St., Cincinnati, O.
 Luxmoor Co., 114 E. 13th St., New York, N. Y.
 Massari Co., H. W., 309 S. State St., Chicago, Ill.
 Orcutt & Co., J. C., 134 S. 13th St., Lincoln, Neb.
 Staats & Co., E. G., Mt. Pleasant, Ia.
 Thomson Mfg. Co.—See Hunt & Co.

FLANGES, Pressed Steel Hub*(For Forged or Cast Flanges—See Forgings; also, Castings)*

- Bossert Corp., Utica, N. Y.
 Brewer Tichenor Corp., Cortland, N. Y.
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Crosby Co., Buffalo, N. Y. (See page 813.)
 Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis.
 Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O.
 Kelsey Wheel Co., Detroit, Mich. (See page 953.)
 Powell Pressed Steel Co., Hubbard, O. (See page 949.)
 Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)
 Worcester Stamped Metal Co., Worcester, Mass. (See page 811.)

FLASH BOILERS—See Boilers**FLASHLIGHTS, ELECTRIC—See Lights, Electric Flash****FLAT BELTS—See Belting, Leather****FLEXIBLE CONDUIT—See Conduit, Flexible Car Wiring**

Everything is listed under the NOUN or principal word

FLEXIBLE CONTROL CABLE—See Cable, Flexible Control

FLEXIBLE LEATHER MOULDING—See Moulding, Flexible Leather

FLEXIBLE METAL HOSE—See Tubing, Flexible Metallic; also Hose, Metal Lined

FLEXIBLE SHAFT COUPLINGS—See Couplings, Flexible Shaft

FLEXIBLE SHAFTS—See Shafting, Flexible

FLEXIBLE TUBING—See Tubing, Flexible

FLOATS, Cork

(For Carburetors, Oil and Gasoline Gages, etc.; see also Floats, Metal)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa.

Diamond Cork Co., 59 Pearl St., New York, N. Y.

Forsyth Metal Goods Co., Elm St., East Aurora, N. Y.

Mundet & Son, L., 8, 11th & Berry Sts., Brooklyn, N. Y. (See page 411.)

Paddock Cork Co., 1209-17 DeKalb Ave., Brooklyn, N. Y. (See page 933.)

Spanish-American Cork & Specialty Co., (Westport), Baltimore, Md.

FLOATS, Metal

(For Carburetors, Oil and Gasoline Gages, etc.; see also Floats, Cork)

Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa.

Deposited Metal Products Co., 65 Bridge St., Newark, N. J.

Fitzgerald Mfg. Co., Torrington, Conn. (See page 411.)

Forsyth Metal Goods Co., Elm St., East Aurora, N. Y.

Goodnow & Blake Mfg. Co., Fourth & Porter Sts., Detroit, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Naugatuck Mfg. Co., Naugatuck, Conn.

Weber Bros. Metal Works, 103-23 N. Jefferson St., Chicago, Ill.

FLOOR BOARD MATS FOR FORDS—See Mats, Floor Board

FLOOR BOARDS FOR FORDS—See Boards, Floor or Foot

FLOOR MATS—See Carpet, Coach; also Linoleum; also Mats, Rubber

FLOWER VASES—See Holders, Bouquet

FLUIDS, Priming

(See also Ether, Denatured)

Speyer Mfg. Co., 53 Hope St., Brooklyn, N. Y. "Start Easy."

Start Easy—See Speyer Mfg. Co.

Sterno Corp., New York, N. Y. (See page 269.)

FLUX, BRAZING—See Compounds, Brazing

FLUX, Soldering

(For self fusing solder—See Solder, Bar and Wire)

Aero-Flux—See Reade Mfg. Co.

Allen Co., L. B., 4548 N. Lincoln St., Chicago, Ill. "Alumi-Flux."

Alumalux Co., E. Shelby St., Sidney, O. "Rajah."

Alumi-Flux—See Allen Co.

Aluminum Fix Co., 1964 E. 55th St., Cleveland, O.

American Chemical Paint Co., 273 E. Jefferson St., Detroit, Mich. "Fiosol." (See page 263.)

Benson Co., Alex. R., Hudson, N. Y. "Yagers."

Blake Signal & Mfg. Co., Boston, Mass. (See page 821.)

Brunner Chemical Works, 217 E. Third St., Cincinnati, O. "Queen."

Burnley Battery & Mfg. Co., Clay St., North East, Pa.

Callahan & Co., Geo., 113 Front St., New York, N. Y.

Chicago Solder Co., 4201 Wrightwood Ave., Chicago, Ill. "Kester."

(See page 787.)

Corlies Supply & Mfg. Co., 1906 Olive St., St. Louis, Mo.

Crescent—See McGill Mfg. Co.

Crystalite—See Reade Mfg. Co.

Dunton Co., M. W., 670 Eddy St., Providence, R. I. "Nokorode."

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."

Dutch—Van Cleef Bros.

Emenar Co., 44 E. 23d St., New York, N. Y. "Solderall."

Eureka—See Grasselli Chemical Co.

Fiosol—See American Chemical Paint Co.

Grasselli Chemical Co., Guardian Bldg., Cleveland, O. "Standard," "Eureka."

Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder-Worker." (See page 655.)

Hess & Son, 2910 N. 16th St., Philadelphia, Pa. "Tinol."

Illinois Smelting & Refining Co., 410 N. Peoria St., Chicago, Ill. "Peerless."

Incomparable—See Reade Mfg. Co.

Kalbfleisch Corp., 31 Union Sq., W., New York, N. Y. (See page 357.)

Kester—See Chicago Solder Co.

McGill Mfg. Co., 259 Indiana Ave., Valparaiso, Ind. "Crescent," "Star."

Milmore Corp., 215 W. Jefferson Blvd., South Bend, Ind.

No-Compare—See Reschke Machine Works Co.

Nokorode—See Dunton Co.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)

Norwesco—See Northwestern Chemical Co.

Peerless—See Illinois Smelting & Refining Co.

Peerless—See Solderall Co.

Queen—See Brunner Chemical Works.

Rajah—See Alumalux Co.

Reade Mfg. Co., 135 Hoboken St., Jersey City, N. J. "Incomparable," "Readina," "Aero-Flux," "Crystalite."

Readina—See Reade Mfg. Co.

Red Letter—See Ruby Chemical Co.

Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans. "No Compare."

Everything is listed under the NOUN or principal word

FLUX, Soldering (Continued)

Rie-Nie—See Durkee-Atwood Co.
 Ruby Chemical Co., 157 W. State St., Columbus, O. "Red Letter."
 S. & P. Mfg. Co., 255 W. 169th St., New York, N. Y.
 Schneider, Emil, 298-306 South St., Newark, N. J.
 Solderall—See Emenar Co.
 Solderall Co., 127 Sussex Ave., Newark, N. J. "Peerless."
 Standard—See Grasselli Chemical Co.
 Star—See McGill Mfg. Co.
 Tinol—See Hess & Son.
 Universal Fluxine Co., 604 S. Main St., Urbana, O.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
 Wonder Worker—See Hall-Thompson Co.
 Yagers—See Benson Co.

FLUX, WELDING—See Compounds, Welding

FLY WHEEL BALANCERS—See Ways, Balancing

FOLDING PAILS—See Buckets, Collapsible

FOOT ACCELERATORS—See Pedals, Special Accelerator

FOOT ACCELERATORS FOR FORDS—See Accelerators, Foot

FOOT BOARDS FOR FORDS—See Boards, Floor or Foot

FOOT PUMPS—See Pumps, Foot Tire

FOOT PUSHES—See Pushes, Foot

FOOT RAILS—See Rests, Foot

FOOT RAILS FOR FORDS—See Rails, Foot

FOOT RESTS—See Rests, Foot; also Hassocks, Automobile

FOOT SCRAPERS—See Scrapers, Foot

FOOTMAN LOOPS—See Loops, Brass Snap and Strap

FORCING PRESSES—See Presses, Arbor

FORE-DOOR VENTILATORS—See Ventilators, Limousine and Fore-Door

FORGINGS, Drop

Accessory Forgings Co., 6438 Orleans St., Detroit, Mich.
 Allegheny Forging Co., Keenan Bldg., Pittsburgh, Pa.
 Allen & Co., S. L., No. Penn Junction, Philadelphia, Pa.
 American Forge & Machine Co., 1650 Barth Ave., Canton, O. (See page 385.)
 American Forging & Socket Co., Pontiac, Mich. (See page 387.)
 American Forgings Co., 2700-98 N. 24th St., Birmingham, Ala.

Atlas Drop Forge Co., 209 W. Mt. Hope Ave., Lansing, Mich.

Atwater Mfg. Co., Plantsville, Conn.

Baker Gun & Forging Co., Batavia, N. Y.

Barnett Drop Forging Co., Ward Ave., Easthampton, Mass.

Bavler, Nelson, Cobalt, Conn.

Belden Machine Co., Whalley Ave. & Tryon St., New Haven, Conn.

Benton Harbor Malleable Foundry Co., Benton Harbor, Mich.

Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Blakeslee Forging Co., Plantsville, Conn.

Bonney Forge & Tool Works, Allentown, Pa.

Brennan & Co., John, 24th St. & M. C. R. R., Detroit, Mich. "Jay Bee." (See page 393.)

Brewer Tichener Corp., Cortland, N. Y.

Brill Co., J. G., 62d St. & Woodland Ave., Philadelphia, Pa.

Brooks Machine Co., York, Pa.

Buffalo Drop Forge Co., 53-59 Carroll St., Buffalo, N. Y.

Canton Drop Forging & Mfg. Co., Canton, O. (See page 386.)

Cape Ann Tool Co., 150 Granite St., Pigeon Cove, Mass.

Capitol—See Washington Steel & Ordnance Co.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)

Champion Machine & Forging Co., 3695 E. 78th St., Cleveland, O. (See page 389.)

Cheney Hammer Corp., H., Little Falls, N. Y.
 Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 121.)

Christie-Kline Forge Co., 2737-39 Gurin St., Detroit, Mich.

Clapp Mfg. Co., E. D., 305 W. Genesee St., Auburn, N. Y.

Cleveland City Forge & Iron Co., 4501 Lakeside Ave., Cleveland, O.

Cleveland Drop Forge Co., 3800 Superior Ave., Cleveland, O. (See page 439.)

Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.

Columbian Hardware Division, 1290 E. 53rd St., Cleveland, O.

Columbus Bolt Works Co., Columbus, O. (See page 147.)

Columbus Forge & Iron Co., Columbus, O. (See page 386.)

Crescent Forgings Co., Oakmont, Pa.

Crucible Steel Forge Co., Cleveland, O.

Davis Sewing Machine Co., Linden & Davis Aves., Dayton, O.

Dean Forging Co., 1825 E. Jackson St., Muncie, Ind.

Detroit Forging Co., 284 Mt. Elliott Ave., Detroit, Mich.

Drop Forging Co. of New York, 297 West Side Ave., Jersey City, N. J.

Duff Mfg. Co., Pittsburgh, Pa. (See page opposite Inside Back Cover.)
 Dunbar Drop Forge Co., 2506 W. 21st St., Chicago, Ill.

E. S. F.—See Electric Steel & Forge Co.

Eccles Co., Richard, 1-7 S. Division St., Auburn, N. Y.

Electric Steel & Forge Co., 6600 Grant Ave., Cleveland, O. "E. S. F."

Electro Steel Co., Pittsburgh, Pa.

Endicott Forging & Mfg. Co., Endicott, N. Y.

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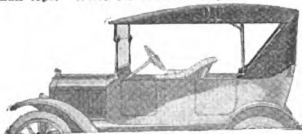
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- Eureka Co., North East, Pa.
 Federal Drop Forge Co., 2200 S. Washington Ave., Lansing, Mich.
 Federal Equipment & Supply Co., 298 Broadway, New York, N. Y.
 Federal Signal Co., Albany, N. Y.
 Forge Products Corp., 901 Green St., Ann Arbor, Mich.
 Frost Gear & Forge Co., Jackson, Mich. (See page 386.)
 Fruin Drop Forge Co., 343-55 Root St. Chicago, Ill.
 Fulton Machine & Forging Co., Canal Fulton, O.
 General Drop Forge Co., Buffalo, N. Y. (See page 386.)
 General Railway Signal Co., Rochester, N. Y.
 General Steel Co., Public Service Bldg., Milwaukee, Wis.
 Globe Malleable Iron & Steel Co., 101 Greenway Ave., Syracuse, N. Y.
 Grant-Hammond Corp., New Haven, Conn.
 Great Lakes Forge Co., 14 E. Jackson Blvd., Chicago, Ill. "Kleenkut." (See page 389.)
 Harley Co., 1921 Page Blvd., Springfield, Mass.
 Harold Tool & Forge Co., Columbiana, O.
 Harvey Spring & Forging Co., 106 A 17th St., Racine, Wis.
 Henry & Allen, 2-36 Wadsworth St., Auburn, N. Y.
 Herbrand Co., 109-25 E. State St., Fremont, O.
 Imperial Drop Forge Co., 510 S. Harding St., Indianapolis, Ind.
 Indiana Mould & Machine Works, 1015 S. Council St., Muncie, Ind.
 Indianapolis Drop Forging Co., 1300 Madison Ave., Indianapolis, Ind.
 Infuso—See Steel Improvement & Forge Co.
 Ingalls-Shepard Forging Co., 147th St. & Page Ave., Harvey, Ill.
 Interstate Drop Forge Co., 2000 27th St., Milwaukee, Wis. (See page 385.)
 Jay-Bee—See Brennan & Co.
 Jefferson Forge Products Co., Detroit, Mich. (See page 947.)
 Kettler-Elliott Co., 3153 S. California Ave., Chicago, Ill.
 Keystone Drop Forge Works, Easton, Pa.
 Keystone Forging Co., Duke & Front Sts., Northumberland, Pa.
 Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn.
 Kleenkut—See Great Lakes Forge Co.
 Klinger Iron Works, 292 Flushing Ave., Brooklyn, N. Y.
 Krauter & Co., Newark, N. J. (See page 643.)
 Kropp Forge Co., 2524 W. 21st St., Cicero, Ill.
 Ladish Drop Forge Co., Cudahy, Wis. (See page 385.)
 Lakeside Forge Co., Erie, Pa. (See page 961.)
 Lansing Forge Co., Logan & Albert Sts., Lansing, Mich.
 Larson, Chas. E., 111 N. Desplaines St., Chicago, Ill.
 Lehigh Engineering Co., Royersford, Pa.
 Liggett Spring & Axle Co., Monongahela, Pa.
 McDougall & Potter Co., 606-12 W. 55th St., New York, N. Y.
 Machinery Forging Co., 5450 Hamilton Ave., Cleveland, O.
 Melling Forging Co., 501 North St., Lansing, Mich.
 Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.
 Michigan Drop Forge Co., S. Saginaw St., Pontiac, Mich.
- Milwaukee Forge & Machine Co., Milwaukee, Wis. (See pages 135 and 389.)
 Moline Forging & Mfg. Co., 42d St. & Fourth Ave., Moline, Ill.
 Moore Drop Forging Co., 336 Birnie Ave., Springfield, Mass.
 Mulholland, W. J., Commercial Trust Bldg., Philadelphia, Pa.
 National Forge & Tool Co., Irvine, Pa.
 National Lock Washer Co., 40 Hermon St., Newark, N. J.
 New England Forge Co., 9 Plymouth St., Worcester, Mass.
 New London Ship & Engine Co., Groton, Conn.
 Nilson-Miller Co., 50 13th St., Hoboken, N. J. (See page 719.)
 O. K. Tool Holder Co., Shelton, Conn.
 Obenberger Forge Co., John, West Allis, Wis.
 Octigan Drop Forge Co., 2500 Lowe Ave., Chicago, Ill.
 Ohio Forge Co., Cleveland, O. (See page 911.)
 Oliver Iron & Steel Co., Tenth & Muriel Sts., Pittsburgh, Pa.
 Owensboro Forging Co., W. Main St., Owensboro, Ky.
 Pan Motor Co., St. Cloud, Minn.
 Park Drop Forge Co., Cleveland, O. (See page 309.)
 Pittsburg Knife & Forge Co., Corapolis, Pa.
 Pollak Steel Co., Equitable Bldg., New York, N. Y. (See page 387.)
 Portland Forge & Foundry Co., Portland, Ind.
 Pressed Steel Car Co., 307 Fifth Ave., Pittsburgh, Pa.
 Quaker Tool Co., 120 W. Venango St., Philadelphia, Pa.
 Queen City Forging Co., Tennyson & Dumont Sts., Cincinnati, O.
 Reverse Drop Forge Co., 164 Broadway, Revere, Mass.
 Richmond Forging Corp., Richmond, Va.
 Rivetless Chain & Engineering Co., Avon, Pa.
 Rockford Drop Forge Co., Rockford, Ill. (See page 389.)
 Savage Arms Corp., Sharon, Pa.
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
 Schuylkill Drop Forge Co., Luzerne & Third Sts., Philadelphia, Pa.
 Scranton Forging Co., Scranton, Pa.
 Shambow Shuttle Co., 601 N. Main St., Woonsocket, R. I.
 Smith Corp., A. O., Milwaukee, Wis. (See page 435.)
 Smith & Co., H. D., Plantville, Conn.
 Smith & Hemenway, 130 Colt St., Irvington, N. J.
 Spang & Co., Butler, Pa.
 Spicer Mfg. Corp., South Plainfield, N. J. (See page 497.)
 Standard Equipment Co., Lorain Ave., & W. 100th St., Cleveland, O.
 Standard Forgings Co., Railway Exchange Bldg., Chicago, Ill.
 Standard Parts Co., Cleveland, O. (See pages 85, 119, 701 and 795.)
 Steel Forgings Co., Brotherton Rd., Cincinnati, O.
 Steel Improvement & Forge Co., 5003 Windsor Ave., Cleveland, O. "Infuso."
 Storms Drop Forging Co. (E. Springfield), Springfield, Mass.
 Strieby & Foote Co., 301 Ogden St., Newark, N. J.
 Sundberg Co., 1024 W. Kinzie St., Chicago, Ill.
 Thomson Drop Forge Co., W. Main St., Plantsville, Conn.
 Tioga Steel & Iron Co., 52nd St. & Grays Ferry Ave., Philadelphia, Pa.

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FORGINGS, Drop (Continued)

Transue & Williams Steel Forging Corp., Alliance, O. (See page 805.)
 Twin City Forge & Foundry Co., Stillwater, Minn.
 Union Drop Forge Co., 353 W. Grand Ave., Chicago, Ill.
 Union Forging Co., Union, N. Y. (See page 253.)
 Union Switch & Signal Co., Swissvale, Pa.
 United States Chain & Forging Co., Pittsburgh, Pa. (See page 231.)
 Universal Machine Co., Bowling Green, O.
 Washington Steel & Ordnance Co., Washington, D. C. "Capitol."
 West & Dennett Co., 14 E. Jackson Blvd., Chicago, Ill.
 Western Drop Forge Co., Marion, Ind.
 Western Malleable Steel Co., 1250 Jefferson Ave., W., Detroit, Mich.
 Western Tool & Forge Co., Brackenridge, Pa.
 Wharton, Jr., & Co., Wm., Easton, Pa.
 Whelan Drop Forge Co., 27th St. & 37th Ave., S., Minneapolis, Minn.
 Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.
 Wilcox Mfg. Co., D., Mechanicsburg, Pa.
 Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. (See page 903.)
 Woonsocket Wagon Mfg. Co., 15 Worrall St., Woonsocket, R. I.
 Wyman-Gordon, Worcester, Mass. (See Back Bone.)

FORMERS, SPRING EYE—See Tools, Spring Eye Forming

FORMING LATHES—See Lathes, Forming

FORMING MACHINES—See Machines, Louvre, Forming; also Machines, Hood Hinge Forming

FORMING TOOLS—See Tools, Wire Terminal Forming

FOUNDRY SUPPLIES—See Supplies, Foundry.

FRAME EXTENSIONS FOR FORDS—See Extensions, Dummy Frame

FRAME LINING—See Lining, Body or Frame

FRAME PADDING—See Lining, Body or Frame

FRAMES, Hack Saw

(For Hack Saw Blades—See Blades, Hack Saw)

A A A—See Atkins & Co.
 Atkins & Co., E. C., 402 S. Illinois St., Indianapolis, Ind. "A A A."
 Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Matchless."
 Buffum Tool Co., Louisiana, Mo. (See page 883.)
 Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.
 Consolidated Tool Works, 296 Broadway, New York, N. Y. "Pilot."
 Crown—See Union Hardware Co.
 Diamond Saw & Stamping Works, 257-61 Seventh St., Buffalo, N. Y. "Sterling."
 Dikeman Mfg. Co., Merwin St., Norwalk, Conn.

Disston & Sons, Henry, (Tacony), Philadelphia, Pa.
 Eagle—See Union Hardware Co.
 Goodell-Pratt Co., Greenfield, Mass.
 Griffin Co., G. W., Franklin, N. H.
 Jennings & Co., C. E., 71-73 Murray St., New York, N. Y.
 Langellier Mfg. Co., 67 Clifford St., Providence, R. I.
 Master Grip—See Thompson & Son Co.
 Matchless—See Bridgeport Hardware Mfg. Corp.
 Milford—See Thompson & Son Co.
 Millers Falls Co., Millers Falls, Mass. "Star."
 Napier Saw Works, Myrick Bldg., Springfield, Mass.
 Pilot—See Consolidated Tool Works.
 Red Devil—See Smith & Hemenway.
 S. & I. Co., 55-57 Governor St., Springfield, Mass.
 Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."
 Star—See Millers Falls Co.
 Starrett Co., L. S., Athol, Mass.
 Sterling—See Diamond Saw & Stamping Works.
 Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Milford," "Master Grip."
 Union Hardware Co., Torrington, Conn. "Crown," "Eagle."
 Union Tool Co., 48 E. River St., Orange, Mass.
 Utility—See West Haven Mfg. Co.
 Victor Saw Works, 1 Rowland Ave., Springfield, Mass.
 West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn. "Utility."

FRAMES, Pressed Steel

American Motor Body Co., 1800 Lehigh Ave. W., Philadelphia, Pa.
 Detroit Pressed Steel Co., Detroit, Mich. "Presteel." (See page 943.)
 Forsyth Bros. Co., Harvey, Ill. (See page 949.)
 Hydraulic Pressed Steel Co. of The Hydraulic Steel Co., Cleveland, O.
 Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.
 Parish Mfg. Co., Reading, Pa.
 Parish & Bingham Corporation, Cleveland, O. (See page 242.)
 Pressed Steel Car Co., 307 Fifth Ave., Pittsburgh, Pa.
 Presteel—See Detroit Pressed Steel Co.
 Savage Arms Corp., Sharon, Pa.
 Sharon Pressed Steel Co., Sharon, Pa. (See page 391.)
 Slick-Knox Steel Co., Sharon, Pa.
 Smith Corp., A. O., Milwaukee, Wis. (See page 435.)

FRAMES, WOOD CUSHION—See Parts, Wood

FRICTION CLUTCH TRACTOR PULLEYS—See Pulleys, Tractor Clutch

FRICTION CLUTCHES—See Clutches; Friction

FRICTION DISCS—See Frictions, Fibre

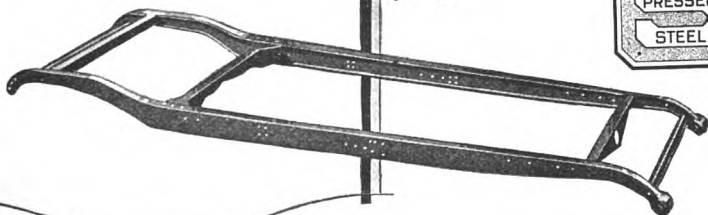
FRICTION LEATHER—See Leather, Friction

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Divine Bros. Co., 203 Whitesboro St., Utica, N. Y.
 Rockwood Mfg. Co., 1301 English Ave., Indianapolis, Ind.

FRONT WHEEL BEARINGS FOR FORDS
 —See Bearings, Front Wheel

FRONT WHEEL SPINDLES—See Spindles, Special Front Wheel for Fords

FUEL ECONOMIZERS—See Mixers, Economizers or Agitators, Fuel

FUEL LEVEL INDICATORS—See Gages, Gasoline Tank

FUEL MIXERS—See Mixers, Economizers or Agitators; also Vaporizers

FUEL RESERVE COCKS—See Valves, Two Way Tank

FUEL RESERVE COCKS FOR FORDS—See Cocks, Fuel Supply

FUEL SAVERS—See Mixers, Economizers or Agitators

FUEL STRAINERS—See Funnels, Gasoline; also Strainers, Gasoline

FUNNELS and MEASURES, Metal*(For Garage use for Gasoline or Oil)*

All-in-One—See Brookins Mfg. Co.
 Atlantic Stamping Co., 180 Ames St., Rochester, N. Y.
 Beacon—See Mooers-Wright Co.
 Best, R. L., Bismarck, N. Dak.
 Brookins Mfg. Co., Dayton, O. "All-in-One."
 Brown Stamping Co., Toledo, O.
 Central Stamping Co., 173-74 Fulton St., New York, N. Y. "Puritan."
 Dickson, J. M., 310 E. Hudson Terminal, New York, N. Y.
 Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. "Saval," "Kompact," "Flexo." (See page 185.)
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Swing Spout." (See page 523.)
 Entorp Filter Co., Amboy, Ill.
 Flexo—See Dover Stamping & Mfg. Co.
 Grooten Pump Co., 171 Middle Ave., Aurora, Ill.
 Hoaglin Mfg. Co., F. L., 200 N. Main St., Waupaca, Wis. "Nospil."
 Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Kompact—See Dover Stamping & Mfg. Co.
 Kraft, A. C., 333-35 W. Lake St., Chicago, Ill.
 Mooers-Wright Co., 1400 Broadway, New York, N. Y. "Beacon." (See page 185.)
 National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y. "Nesco."
 National Mfg. Co., 101 S. E. Fifth St., Des Moines, Iowa.
 Nesco—See National Enameling & Stamping Co.
 No-Shammy Products Co., 5710 Hough Ave., Cleveland, O.
 Nospil—See Hoaglin Mfg. Co.
 Parbee Mfg. Co., 116 N. Third St., Hannibal, Mo.

Puritan—See Central Stamping Co.
 Puritan—See Sexton Can Co.
 Saval—See Dover Stamping & Mfg. Co.
 Schuyler Mfg. Co., W. S., 687 W. Main St., Savannah, Mo.
 Sexton Can Co., 123 Broad St., Boston, Mass. "Puritan."

Swing Spout—See Edelmann & Co.
 Vogel & Bros., Wm., 37 S. Ninth St., Brooklyn, N. Y.
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 601.)

FUR BOOTS—See Boots, Motorists'

FUR COATS—See Clothing, Motorists'

FUR GLOVES—See Gloves, Motorists'

FURNACES, Annealing and Case Hardening

American Gas Furnace Co., Elizabeth, N. J. (See page 393.)
 Anthony Co., 138 West Ave., Long Island City, N. Y.
 Beeman & Broughton Co., 454-58 21st St., Detroit, Mich.
 Bellevue Furnace Co., 2971 Bellevue Ave., Detroit, Mich.
 Best, W. N., 11 Broadway, New York, N. Y.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Buckeye—See Macleod Co.
 Buzzer—See Hones, Charles A.
 Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."
 Gantt—See Witteman Co.
 Gilbert & Barker Mfg. Co., Springfield, Mass. (See page 849.)
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Hones, Charles A., 122 Grand Ave., Baldwin, N. Y. "Buzzer."
 Johnson Gas Appliance Co., 520 E. Ave., West Cedar Rapids, Ia.
 Kenworthy, Charles F., Waterbury, Conn. "Non-Oxidizing."
 Lancaster Iron Works, 580 S. Prince St., Lancaster, Pa. "Mirca."
 Macleod Co., 2232 Bogen St., Cincinnati, O. "Buckeye."
 Mirca—See Lancaster Iron Works.
 Non-Oxidizing—See Kenworthy, Charles F.
 Rockwell Co., W. S., 50 Church St., New York, N. Y.
 Scott, C. U., 1340 Second Ave., Davenport, Ia.
 Scott & Son, C. W., 1510 First Ave., Rock Island, Ill.
 Standard Fuel Engineering Co., 461-75 Baltimore Ave., W., Detroit, Mich.
 Stewart—See Chicago Flexible Shaft Co.
 Tate-Jones & Co., 23 Broad St., Leetsdale, Pa.
 Walsner Mfg. Co., 19th Ave. & Ninth St., Rockford, Ill.
 Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 847.)
 Whiting Foundry Equipment Co., 157th & Lathrop Sts., Harvey, Ill.

FURNACES, Babbitt Melting

American Gas Furnace Co., Elizabeth, N. J. (See page 393.)
 Anthony Co., 138 West Ave., Long Island City, N. Y.
 Beeman & Broughton Co., 454-58 21st St., Detroit, Mich.
 Buzzer—See Hones, Charles A.

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"Forged in Detroit" **A Message With a Meaning**

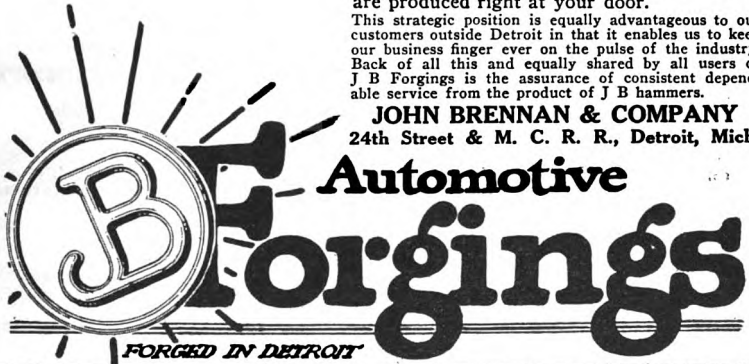
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Cluster Burners
Cyanide Furnaces
Cylindrical Furnaces
Forges
Glass Burners
Glass Forges
Hardening Hammers
Heating Machines
Melting Furnaces

Muffle Furnaces
Nipple Burners
Oil Tempering Furnaces
Oven Furnaces
Plating Furnaces
Radiator Burners
Rivet Heaters
Slot Burners
Soft Metal and Lead Hardening
Furnaces
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Sweep Reducing Furnaces
Tempering Plates
Tire Heaters
Tube Furnaces
Umbrella Burners
Nichrome Retorts and Parts

American Gas Furnace Co.

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Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."
 Davis Machine Tool Co., 307, St. Paul St., Rochester, N. Y. "Vesuvius."
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Hones, Charles A., 122 Grand Ave., Baldwin, N. Y. "Buzzer."
 Johnson Gas Appliance Co., 520 E Ave., West Cedar Rapids, Ia.
 Stewart—See Chicago Flexible Shaft Co.
 Vesuvius—See Davis Machine Tool Co.

FURNACES, Brass and Copper Melting

Anthony Co., 138 West Ave., Long Island City, N. Y.
 Barnett Foundry & Machine Co., Oscar, Lyons Ave. & Colt St., Irvington, N. J.
 Best, W. N., 11 Broadway, New York, N. Y.
 Booth Electric Furnace Co., 326 W. Madison St., Chicago, Ill.
 Brass Founders Supply Co., 357 Wilson Ave., Newark, N. J.
 Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Stewart."
 Fisher Co., Alfred, 803 W. Madison St., Chicago, Ill.
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Hawley Down Draft Furnace Co., Valley Ave. & Hometown Rd., Easton, Pa.
 Johnson Gas Appliance Co., 520 E Ave., West Cedar Rapids, Ia.
 Kroeschell Bros. Co., 444 W. Erie St., Chicago, Ill. "Kroeschell-Schwartz."
 Kroeschell-Schwartz—See Kroeschell Bros. Co.
 Monarch Engineering & Mfg. Co., American Bldg., Baltimore, Md. "Steele-Harvey."
 Rockwell Co., W. S., 50 Church St., New York, N. Y.
 Steele-Harvey—See Monarch Engineering & Mfg. Co.
 Stevens, Frederic B., Third & Larned Sts., Detroit, Mich.
 Stewart—See Chicago Flexible Shaft Co.
 Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 847.)
 Whiting Foundry Equipment Co., 157th & Lathrop Sts., Harvey, Ill.

FURNACES, CASE HARDENING — See Furnaces, Annealing

FURNACES, COPPER MELTING—See Furnaces, Brass and Copper Melting

FURNACES, GASOLINE — See Torches, Gasoline

FURNACES, HEAT TREATING—See Furnaces, Annealing and Case Hardening

FURNACES, Soldering

(See also Torches, Gasoline)

Anthony Co., 138 West Ave., Long Island City, N. Y.
 Buzzer—See Hones, Charles A.
 Hones, Charles A., 122 Grand Ave., Baldwin, N. Y. "Buzzer."
 Yeast Mfg. Co., Meadville, Pa. (See page 925.)

FUSE CLIPS—See Clips, Fuse**FUSE HANDLES—See Handles, Fuse****FUSES, Electric**

Asch and Co., Inc., 10-24 W. 61st St., New York, N. Y. (Eastern Distributors for Killark Fuses.) (See page 247.)
 Buss—See Bussmann Mfg. Co.
 Bussmann Mfg. Co., St. Louis, Mo. "Buss." (See page 395.)
 Chicago Fuse Mfg. Co., Chicago, Ill. "Union." (See page 399.)
 D. & W. Fuse Co. (Elmwood St.), Providence, R. I.
 Daum, A. F., 1157 Hodgkiss St., Pittsburgh, N. S., Pa.
 Economy Fuse & Mfg. Co., 328 W. Kinzie St., Chicago, Ill.
 Electric Fuseguard Co., 60 Shipman St., Newark, N. J.
 General Electric Co., Schenectady, N. Y. (See page 697.)
 Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. (Sole Distributors for Johns-Pratt Co., Hartford, Conn. Noark.)
 Johns-Pratt Co.—See Johns-Manville Co.
 Killark Electric Mfg. Co., St. Louis Mo. (See page 395.)
 Monarch Re-Fillable Fuse Co., Jamestown, N. Y.
 Noark—See Johns-Manville Co.
 Oettinger Corp., F. W., 25 Vanderbilt Ave., New York, N. Y. "Tower."
 Safe-T—See Safety Fuse Handle Co.
 Safety Fuse Handle Co., 96-104 Spring St., New York, N. Y. "Safe-T." (See page 395.)
 Tower—See Oettinger Corp.
 Union—See Chicago Fuse Mfg. Co.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

GAGE GLASS REFLECTORS—See Mirrors, Water Gage

GAGE GLASSES—See Glasses, Lubricator

GAGE LAMPS—See Lamps, Electric Dash

GAGES, AIR — See Gages, Steam; also Gages, Tire

GAGES, ALIGNING — See Gages, Wheel Aligning

GAGES, Battery

(Pocket and Dash Board Battery Testers. For Standard Instruments—See Ammeters; For Battery Storage Testing Instruments—See Instruments, Storage Battery Testing)

Advance—See Firth & Co.
 American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."
 Asch and Co., Inc., 10-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Clark" Gages.) (See page 247.)
 Ballman-Whitten Mfg. Co., 4015 Laclede Ave., St. Louis, Mo.
 Batometer—See Fairbanks Co.
 Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Hoyt Electrical Instrument Works, Penacook, N. H. "Ultimate." "Utility.") (See page 75.)
 Carleton Co., 170 Summer St., Boston, Mass.
 Cemco—See National Gauge & Equipment Co.
 Clark—See National Gauge & Equipment Co.

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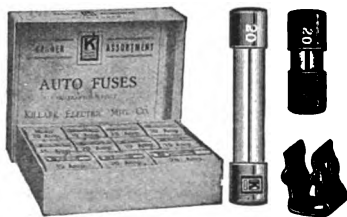
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532 Boston Block,
Minneapolis.Schoen Bros.,
321 Boston Bldg.,
Louisville.Electric Sales Co.,
253 S. Broadway,
Los Angeles.B. W. Warner,
10822 Waterloo,
Detroit.

Killark Electric Mfg. Co. St. Louis, Mo.

George H. Mair,
910 First Ave., Seattle.Alex. Hibbard, Inc.,
E. & C. Bldg., Denver.Wood & Lane Co.,
1012-14 Market St.,
St. Louis.A. R. McNally,
517 National City Bldg.,
Cleveland.George H. Smith,
609 Chamber of Commerce
Bldg., Pittsburgh.The Folsom Company,
2016 Main St., Dallas.I. A. Bennett Co.,
112 W. Adams St.,
Chicago.

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GAGES, Battery (Continued)

Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)
 Dow Mfg. Co., 181 Adams St., Braintree, Mass.
 Eclipse—See Firth & Co.
 Eldredge Electric Mfg. Co.—See Firth & Co.
 Eveready—See American Ever Ready Works.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo. "Batometer.") (See pages 491 to 494.)
 Firth & Co., J., 18 Broadway, New York, N. Y. (Sole Distributors for Eldredge Electric Mfg. Co., Springfield, Mass. "Advance," "Eclipse.")
 Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo. (See page 725.)
 Genco—See General Scientific Equipment Co.
 General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."
 Handy—See Roller-Smith Co.
 Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.
 Hempy-Cooper Mfg. Co.—See Fairbanks Co.
 Hoyt Electrical Instrument Works—See Burton-Rogers Co.
 Jewell Electrical Instrument Co., 1648 W. Walnut St., Chicago, Ill.
 Loewus, Edwin H., 304 W. 54th St., New York, N. Y.
 Mac—See Metric Appliance Corp.
 Metric Appliance Corp., 299 Broadway, New York, N. Y. "Mac."
 Nagel Electric Co., W. G., Toledo, O. (See page 405.)
 National Gauge & Equipment Co., La Crosse, Wis. "Cemco," "Clark." (See page 401.)
 P. V.—See Roller-Smith Co.
 Pennsylvania Rubber & Supply Co., 1845-47 Euclid Ave., Cleveland, O. "Praco."
 Praco—See Pennsylvania Rubber & Supply Co.
 Readrite Meter Works, 187 N. Main St., Bluffton, O.
 Roller-Smith Co., 9 Barclay St., New York, N. Y. "Handy," "P. V." (See page 395.)
 Sholder-Excal Mfg. Co., Clyde, O.
 Shontz Co., H. B., Dept C, 161 W. 64th St., New York, N. Y. (Dealers.) (See page 151.)
 Standard Electric Mfg. Co., 126 South St., Newark, N. J.
 Sterling Mfg. Co., 2845-53 Prospect Ave., Cleveland, O. "Trescot."
 Trescot—See Sterling Mfg. Co.
 Ultimate—See Burton-Rogers Co.
 Utility—See Burton-Rogers Co.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)
 Weston Electrical Instrument Co., 16 Weston Ave., Newark, N. J. (See page 481.)

GAGES, Boiler Water-Line

(For indicating height of water in steam boilers)

Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.
 Genco—See General Scientific Equipment Co.
 General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."
 Reliable Water Gauge Co., 1616 Pine St., St. Louis, Mo.
 Schaeffer & Budenberg Mfg. Co., 338 Berry St., Brooklyn, N. Y.
 Waltham Mfg. Co., 28 Porter St. (Jamaica Plain), Boston, Mass.

GAGES, Centre

Athol Machine Co., Athol, Mass.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Goodell-Pratt Co., Greenfield, Mass.
 Starrett Co., L. S., Athol, Mass.
 Wyke, J., South St., Wilmington, Mass.

GAGES, CIRCULATION — See Gages, Water Circulation**GAGES, COMPRESSION—See Gages, Cylinder Compression****GAGES, Cylinder**

Am-Pe-Co. Sales Co., Marshalltown, Iowa. (See page 407.)
 Ames Co., B. C., Waltham, Mass. (See page 399.)
 Engineering Specialties Co., 3024 W. Fort St., Detroit, Mich. (Sole Distributors for Advance Battery & Production Co., Detroit, Mich. "Walker.") (See page 397.)
 Federal Products Corp., 393 Harris Ave., Providence, R. I. (See page 407.)
 Walker—See Engineering Specialties Co.

GAGES, Cylinder Compression

(For testing compression in gas engine cylinders)

Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
 Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. (See pages 607 and 741.)
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Foxboro Co., Neponset Ave., Foxboro, Mass.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. (See page 251.)
 Peterman & Co., 2721 N. Clark St., Chicago, Ill.
 Pierce, Butler & Pierce (Valve & Gage Division), 282 James St., Syracuse, N. Y.
 Rock Sales Co., Minneapolis, Minn.
 Star Device Mfg. Co., 2201-03 Second Ave., Seattle, Wash.
 United States Gauge Co., 44 Beaver St., New York, N. Y. (See page 401.)

GAGES, Depth

Athol Machine Co., Athol, Mass.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Goodell-Pratt Co., Greenfield, Mass.
 Starrett Co., L. S., Athol, Mass.

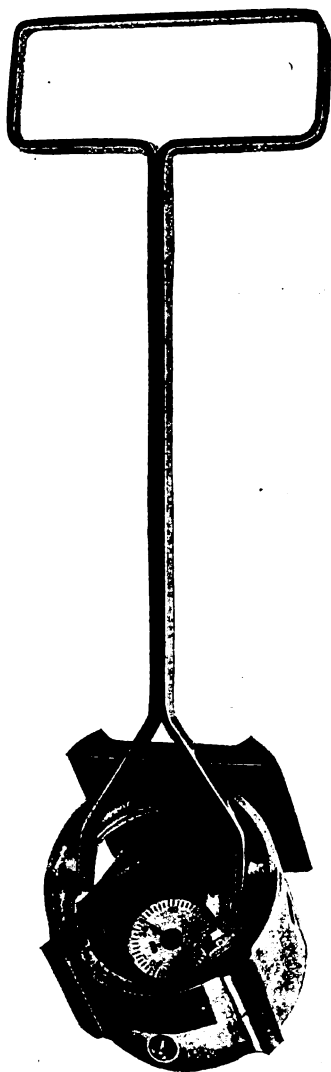
GAGES, Drill and Wire

Blodgett Mfg. Co., 248 Penn St., Rochester, N. Y.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Detroit Twist Drill Co., Detroit, Mich. (See page 351.)
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
 Pexto—See Peck, Stow & Wilcox Co.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
 Starrett Co., L. S., Athol, Mass.

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The Walker Microgage, the tool that saves you time, money, patience and takes the worry, doubt and controversy out of the measuring of cylinder bores.

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The Walker Microgage holds just as important a sphere of usefulness in the Service Station as it does in the factory.

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Engineering Specialties Co.
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Detroit, Mich.

Please mention The Automobile Trade Directory

GAGES, Gasoline Consumption

Buell Mfg. Co., Cottage Grove at 30th, Chicago, Ill. (See page 473.)
 Flometer—See Penberthy Injector Co.
 Jay Corp., Webb, 910 S. Michigan Ave., Chicago, Ill.
 Penberthy Injector Co., Detroit, Mich. "Flometer." (See page 407.)
 Republic Flow Meters Co., 2240 Diversey Parkway, Chicago, Ill.
 Vacuteller Mfg. Co., 1011 Chestnut St., Philadelphia, Pa.
 Vacuummeter Sales Corp., Knoxville, Tenn.

GAGES, FUEL CONSUMPTION — See Gages, Gasoline Consumption**GAGES, Gasoline Tank**

(For indicating the amount of gasoline in fuel tanks)

Akron-Selle Co., High & Chestnut Sts., Akron, O. "Tasco."
 Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.
 Atlantic Motor & Supply Co., 63 Gorham St., Boston, Mass.
 Boston Auto Gage Co., 8 Waltham St., Boston, Mass. "Triumph," "Challenge." (See page 401.)
 Brighton—See Rochester Mfg. Co.
 Challenge—See Boston Auto Gage Co.
 Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. "Safeguard." (See page 399.)
 Cole—See Stamco Engineering Co.
 Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.
 Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)
 Dunn Motor Device Co., 528 Massachusetts Ave., Indianapolis, Ind.
 Foxboro Co., Neponset Ave., Foxboro, Mass. Gasograph—See New Standard Adding Machine Co.
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
 Goite Mfg. Co., Kokomo, Ind. (See page 427.)
 Ideal Brass Works, 660 N. Elder Ave., Indianapolis, Ind.
 Imperial Fluid Gauge Co., Third St. & Rex Ave., S. E. Canton, O.
 Mercury—See Rochester Mfg. Co.
 Nagel Electric Co., W. G., Toledo, O. (See page 405.)
 National Gauge & Equipment Co., La crosse, Wis. (See page 401.)
 National Motor Supply Co., Painesville, O.
 New Standard Adding Machine Co., 3705 Forest Park Blvd., St. Louis, Mo. "Gasograph."
 Rochester Mfg. Co., 29-49 Halstead St., Rochester, N. Y. "Mercury," "Brighton," "Rooman."
 Rooman—See Rochester Mfg. Co.
 Safeguard—See Champion Mfg. Co.
 Stamco Engineering Co., Second & Webb Sts., Dayton, O. "Cole."
 Tasco—See Akron-Selle Co.
 Tell-U-Motor-Meter—See Thompson & Stubor.
 Thompson & Stubor, Rochester, N. Y. "Tell-U-Motor-Meter."
 Triumph—See Boston Auto Gage Co.

GAGES, Gasoline Tank, for Fords

(For indicating the amount of gasoline in fuel tanks)
 American Automatic Devices Co., Chicago, Ill. (See page 251.)

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Apex Electric Mfg. Co., 1410 W. 59th St., Chicago, Ill.
 Baer-Glauber Co., 6523 Euclid Ave., Cleveland, O.
 Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.
 Boston Auto Gage Co., 8 Waltham St., Boston, Mass. "Challenge." (See page 401.)
 Brighton—See Rochester Mfg. Co.
 Buffalo—See O. K. Lock Co.
 Buffalo Gauge Co., 336 Hampshire St., Buffalo, N. Y.
 Challenge—See Boston Auto Gage Co.
 Custer & Sons Mfg. Co., H. S., Stoyestown, Pa. "E-Z-4-U."
 Dependo—See Roper & Co.
 E-Z-4-U—See Custer & Sons Mfg. Co.
 Ever-Right Production Corp., 351-53 Jay St., Brooklyn, N. Y.
 Face-To-Face—See Leitch-Nelson Co.
 Gasograph—See New Standard Adding Machine Co.
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
 Goite Mfg. Co., Kokomo, Ind. (See page 427.)
 Issaquah Garage, Issaquah, Wash.
 Leitch-Nelson Co., 3632 Woodward Ave., Detroit, Mich. "Face-To-Face."
 M-B—See Zim Mfg. Co.
 Mercury—See Rochester Mfg. Co.
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 New Standard Adding Machine Co., 3705 Forest Park Blvd., St. Louis, Mo. "Gasograph."
 O. K. Lock Co., 264 Broadway, Buffalo, N. Y. "Buffalo."
 Ospeco—See Michigan Auto Products Co.
 Rochester Mfg. Co., 29-49 Halstead St., Rochester, N. Y. "Mercury," "Brighton," "Rooman."
 Rooman—See Rochester Mfg. Co.
 Roper & Co., C. F., Hopedale, Mass. "Dependo."
 Stanley Gauge Co., Washington & Pine Sts., Indianapolis, Ind.
 Standex, Inc., 341 E. Ohio St., Chicago, Ill.
 Zim Mfg. Co., 308 N. Wabash Ave., Chicago, Ill. "M-B."

GAGES, Limit

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 GTD—See Greenfield Tap & Die Corp.
 Greenfield Tap & Die Corp., Greenfield, Mass. "GTD." (See page 855.)
 Meldrum-Gabrielson Corp., 107 N. Franklin St., Syracuse, N. Y. "Syracuse."
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Rogers Works, John M., ft. Monmouth St., Gloucester City, N. J.
 Syracuse—See Meldrum-Gabrielson Corp.
 Taft-Peirce Mfg. Co., Woonsocket, R. I.

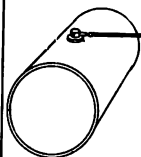
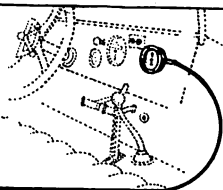
GAGES, Oil, for Fords

(For indicating the amount of oil in the crank case)
 Acme Belting Co., 107 W. Canton St., Boston, Mass.
 Akuret—See Wallace Motor Products Corp.
 American Automatic Devices Co., Chicago, Ill. "Oilometer." (See page 251.)
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.

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The CHAMPION GASOLINE GAUGE FOR THE INSTRUMENT BOARD

A practical Instrument directly before the eyes of the driver showing at all times the amount of gasoline in the tank. The SAFEGUARD of your peace of mind. You KNOW how much gasoline you have.



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GAGES, Oil, for Fords (Cont'd)

Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.
 Benford Auto Products, Inc., Mt. Vernon, N. Y. "Monarch." (See page 645.)
 Billinger Mfg. Co., Saranac, Mich.
 Bowen Products Corp., Auburn, N. Y. (See page 313.)
 Buffalo—See O. K. Lock Co.
 CB—See Cumings Bros.
 Casco Mfg. Co., Jackson St., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)
 Chief Products Co., 2335 Michigan Ave., Chicago, Ill.
 Code Mfg. Co., 1329 W. Lake St., Chicago, Ill.
 Common Sense—See Kreeb, William H.
 Cooper Auto Supply Co.—See Casco Mfg. Co.
 Cumings Bros., 301-03 E. Saginaw St., Flint, Mich. "CB."
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 Gahm-McCormick Co., 806 E. Main St., Streator, Ill.
 Hankelman Co., Chas. E., 2213-15 Pacific Ave., Atlantic City, N. J.
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.
 Huber Co., F. L., 221 N. Channing Ave., St. Louis, Mo.
 Ideal—See Worthington, A. P.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Nebr.
 Kreeb, William H., Sixth & Vine Sts., Cincinnati, O. "Common Sense."
 Lee Mfg. Co., 308 Ashley St., Ann Arbor, Mich. "Watch Dog."
 Lubricating Specialties Co., Toledo, O. "Tel-Oil."
 M-B—See Zim Mfg. Co.
 Monarch—See Benford Auto Products, Inc.
 North Chicago Machine Co., Commonwealth Ave. & 22d St., North Chicago, Ill.
 O. K. Lock Co., 284 Broadway, Buffalo, N. Y. "Buffalo."
 Oilometer—See American Automatic Devices Co.
 Signal-Sight & Automatic Oil Gauge Co., 146 W. Bridge St., Catskill, N. Y. "White-Cop."
 Standard Motor Products Mfg. Corp., 908 W. Chicago Ave., Chicago, Ill.
 Tel-Oil—See Lubricating Specialties Co.
 Thomas-Andrews Corp., Waukegan, Ill.
 Wallace Motor Products Corp., Dept. A.D., 465 Washington St., New York, N. Y. "Akuret." (See page 407.)
 Watch Dog—See Lee Mfg. Co.
 White-Cop—See Signal-Sight & Automatic Oil Gauge Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. Y. (See page 174.)
 Worthington, A. P., 700 N. Main St., Los Angeles, Cal. "Ideal."
 Zim Mfg. Co., 208 N. Wabash Ave., Chicago, Ill. "M-B."

GAGES, Oil Pressure
 Foxboro Co., Neponset Ave., Foxboro, Mass.
 Hancock Mfg. Co., 803 E. Henry St., Charlotte, Mich.
 Lea, E. S., Lafayette & Peace Sts., Trenton, N. J.
 National Gauge & Equipment Co., La crosse, Wis. (See page 401.)

Pierce, Butler & Pierce (Valve & Gage Division), 282 James St., Syracuse, N. Y.
 Standard Motor Products Mfg. Corp., 908 W. Chicago Ave., Chicago, Ill.
 Telometer Mfg. Co., 246-50 Main St., Binghamton, N. Y.
 United States Gauge Co., 44 Beaver St., New York, N. Y. (See page 401.)

GAGES, Plug and Ring

Ames Co., B. C., Waltham, Mass. (See page 399.)
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 GTD—See Greenfield Tap & Die Corp.
 General Tool Co., 1760 Main St., Buffalo, N. Y.
 Greenfield Tap & Die Corp., Greenfield, Mass. "GTD." (See page 855.)
 Johansson, C. E., Poughkeepsie, N. Y. (Importers.)
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Rogers Works, John M., ft. Monmouth St., Gloucester City, N. J.
 Taft-Peirce Mfg. Co., Woonsocket, R. I.
 West & Dodge Co. (Faniel Sta.), Boston, Mass.

GAGES, PRESSURE—See Gages, Steam and Air; also Gages, Oil Pressure; also Gages, Tire Pressure

GAGES, PUMP—See Gages, Tire Pressure

GAGES, Radiator

(For indicating the water level)

Beardmore—See Watometer Co.
 Emco Mfg. Co., Binghamton, N. Y.
 Jarvis & Jarvis, 204 Monroe Ave., Grand Rapids, Mich.
 Watometer Co., Annapolis, Md. "Beardmore."
 Wessoleck, A. W., New Britain, Conn. (See page 253.)

GAGES, RING—See Gages, Plug and Ring

GAGES, Screw Pitch

Ames Co., B. C., Waltham, Mass. (See page 399.)
 Athol Machine Co., Athol, Mass.
 Blodgett Mfg. Co., 248 Penn St., Rochester, N. Y.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 GTD—See Greenfield Tap & Die Corp.
 General Tool Co., 1760 Main St., Buffalo, N. Y.
 Goodell-Pratt Co., Greenfield, Mass.
 Greenfield Tap & Die Corp., Greenfield, Mass. "GTD." (See page 855.)
 Henderson Co., Gullick, 145 W. 36th St., New York, N. Y.
 Perelstous & Storms Tool Corp., 42 Broadway, New York, N. Y.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Sheffield Machine & Tool Co., Dayton, O.
 Starrett Co., L. S. Athol, Mass.
 Union Tool Co., 48 E. River St., Orange, Mass.
 West & Dodge Co. (Faniel Sta.), Boston, Mass.

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COMPANY**

8 Waltham St., Boston, Mass.



OIL GAUGES

INSTRUMENTS that match. We are supplying Oil Pressure Gauges, Ammeters and Dash Thermometers all in identical cases. The instruments complete, including the dials, are all made in one plant.

Dependable instruments beautifully finished.

We also solicit inquiries for Gasoline Tank Gauges and Filler Caps.

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& EQUIPMENT CO.**
LACROSSE, WIS.

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DETROIT NEW YORK CHICAGO



AUTO RUNNING GEAR ALINER



An instrument of precision. Tells quickly whether front wheels are in proper alignment.

CHICAGO

Manufactured by
MECHANICAL UTILITIES CORPORATION
1348 NO. CLARK ST.

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United States Rubber Co.
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Studebaker Corp.
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The White Co.
The Winton Co.
and many others.

List Price, each, \$12.00

Dealers' Discount, 30%

ILLINOIS

Please mention The Automobile Trade Directory

GAGES, Specific Gravity

(To be attached to Gasoline Pumps to show specific gravity of fuel sold)

Elwood Gravity Gauge Co., Elwood, Ind.

GAGES, Steam and Air

(Standard Pressure Gages)

American Steam Gauge & Valve Mfg. Co., 308-20 Camden St., Boston, Mass.
 Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.
 Beifield Co., H., 435 N. Broad St., Philadelphia, Pa.
 Foxboro Co., Neponset Ave., Foxboro, Mass.
 Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 405.)
 Marsh & Co., Jas. P., 118-24 S. Clinton St., Chicago, Ill.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. (See page 251.)
 National Gauge & Equipment Co., La Crosse, Wis. (See page 401.)
 Schaeffer & Budenberg Mfg. Co., 333 Berry St., Brooklyn, N. Y.
 United States Gauge Co., 44 Beaver St., New York, N. Y. (See page 401.)

GAGES, Surface

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Goodell-Pratt Co., Greenfield, Mass.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Starrett Co., L. S., Athol, Mass.
 Wyke, J., South St., Wilmington, Mass.

GAGES, TANK—See Gages, Gasoline Tank; also Gages, Gasoline Consumption

GAGES, TANK, FOR FORDS—See Gages, Gasoline Tank

GAGES, Tire Pressure

(For indicating pressure in tires)

Aero Mfg. Co., 1410 Wrightwood Ave., Chicago, Ill.
 Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. "Tyrometer."
 (See page 297.)
 American Sanitary Lock Co., 1072-30 S. East St., Indianapolis, Ind. "Pop-Off."
 Apex Electric Mfg. Co., 1410 W. 59th St., Chicago, Ill.
 Automobile Device Co., Union National Bank Bldg., Cleveland, O. "Whistler."
 Autoquip Mfg. Co., Rochester, N. Y.
 Barnard Specialty Co., 3390 Maple Ave., Los Angeles, Cal.
 C&S—See Codman & Shurtleff.
 Codman & Shurtleff, 120 Boylston St., Boston, Mass. "C&S."
 Econ-o-cap—See Greist Mfg. Co.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Greist Mfg. Co., New Haven, Conn.
 "Econ-o-cap," "Test-O-Cap."
 (See page 559.)
 Hansen Mfg. Co., Cleveland, O.
 (See page 283.)
 Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill. "Pneu-Meter."
 Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 405.)
 Invincible—See United States Gauge Co.

Kellogg Mfg. Co., Rochester, N. Y.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. (See page 251.)
 Mead Engineering Co., 1133 Broadway, New York, N. Y.
 National Gauge & Equipment Co., La Crosse, Wis. (See page 401.)
 Pierce, Butler & Pierce (Valve & Gage Division), 282 James St., Syracuse, N. Y.
 Pneu-Meter—See Hill Pump Valve Co.
 Pop-Off—See American Sanitary Lock Co.
 Schrader's Son, A., Brooklyn, N. Y.
 (See page 241.)
 Test-O-Cap—See Greist Mfg. Co.
 Try Me Mfg. Co., Westfield, Mass.
 Twitchell Gauge Co., 1516 S. Wabash Ave., Chicago, Ill. (See page 403.)
 Tyrometer—See Allen Auto Specialty Co.
 United States Gauge Co., 44 Beaver St., New York, N. Y. "Invincible."
 (See page 401.)
 Whistler—See Automobile Device Co.

GAGES, VACUUM TANK—See Gages, Gasoline Consumption

GAGES, Water Circulation

(For indicating pressure in water cooling systems)

Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.
 Foxboro Co., Neponset Ave., Foxboro, Mass.
 Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 405.)
 Schaeffer & Budenberg Mfg. Co., 333 Berry St., Brooklyn, N. Y.

GAGES, Wheel Aligning

(For indicating or testing the alignment of front wheels)

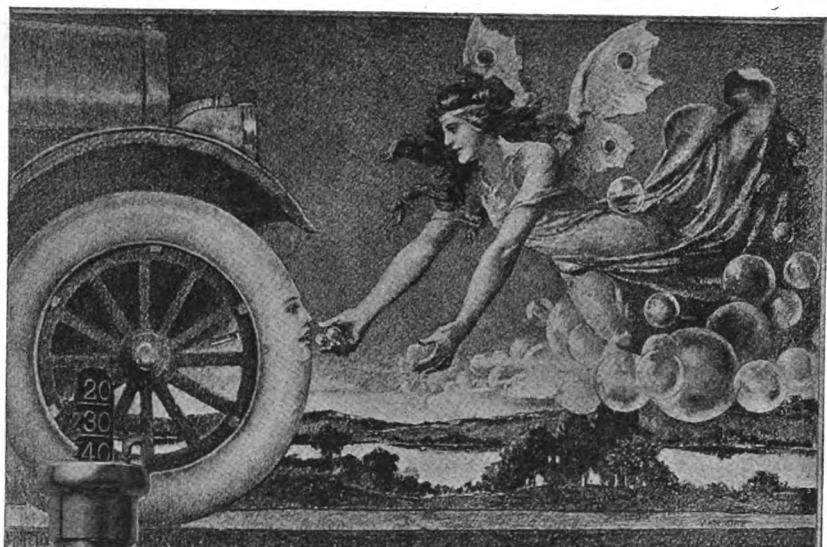
Bear Mfg. Co., Rock Island, Ill.
 (See page 405.)
 Duby, J. F., 11 River St., Mattapan, Mass.
 "Ideal."
 Ideal—See Duby, J. F.
 Mechanical Utilities Corp., 1348 N. Clark St., Chicago, Ill. (See page 401.)
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 661.)

GAGES, WIRE—See Gages, Drill and Wire

GALVANIZING, Sherardizing and Rust-Proofing

American Tap Bush Co., 6404 Jefferson Ave., E., Detroit, Mich.
 American Tube & Stamping Co., Bridgeport, Conn.
 Buffalo Galvanizing & Tinning Works, 49-53 Jackson St., Buffalo, N. Y.
 Chain Products Co., 3924 Cooper Ave., Cleveland, O.
 Cramp & Sons Ship & Engine Building Co., Wm., Philadelphia, Pa.
 (See page 199.)
 Dover Stamping & Mfg. Co., 335 Putnam Ave., Cambridge, Mass. (See page 185.)
 Federal Sign Co., Albany, N. Y.
 Fore River Shipbuilding Corp., Quincy, Mass.
 Galvanizing Corp. of America, 244-52 Eagle St., Brooklyn, N. Y.
 Gender, Paeschke & Frey Co., 1805-1700 St. Paul Ave., Milwaukee, Wis.
 (See page 843.)

Everything is listed under the NOUN or principal word



Copyright, 1921, Twitchell Gauge Co.

Feed Your Tires

the right amount of air and
keep them right by using

A TWITCHELL GAUGE

to make sure that they have the pressure that the Tire
Manufacturers prescribe.

Price \$1.50 in U. S. A.

Your dealer has them.

This is one of a series of ads now being run in consumer publications to stimulate the sale of Twitchell gauges. When sending in your order for your season's supply of Twitchells take into consideration the effect of this advertising as well as the fact that there are a million more automobiles in use this year than last.

The Twitchell Gauge Company

1516 So. Wabash Avenue

Chicago

Please mention The Automobile Trade Directory

GALVANIZING, Sherardizing and Rust-Proofing (Continued)

Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
Maforco—See Market Forge Co.
 Malleable Iron Fittings Co., Branford, Conn. (See page 259.)
 Manitowoc Plating Works, 24th & Franklin Sts., Manitowoc, Wis.
 Market Forge Co., Garvey St. & Blvd., Everett, Mass. "Maforco."
 Meaker Galvanizing Co., 1249 Fulton St., Chicago, Ill.
 Mohegan Tube Co., 306 Scott Ave., Brooklyn, N. Y.
 National Galvanizing Co., 1918-26 Carroll Ave., Chicago, Ill.
 New Haven Sherardizing Co., 368 Windsor St., Hartford, Conn.
 Ohio Sherardizing Co., 1101 Power Ave., Cleveland, O.
 Rockford Metal Specialty Co., 720 E. Main St., Rockford, Ill.
 Scott, C. U., 1340 Second Ave., Davenport, Ia.
 Stanley Works, (Special Production Department), New Britain, Conn. (See page 467.)
 U. S. Electro-Galvanizing Co., 378-84 Park Ave., Brooklyn, N. Y.
 Wise Electro Sherardizing Co., 6320 E. Fort St., Detroit, Mich.

GAPS, Spark

(Auxiliary Spark Gaps, Intensifiers or Indicators)

Accesso Mfg. Co., 99 State St., Boston, Mass.
 All-Spark Ignition Co., 13 Water St., New York, N. Y.
 American Automatic Devices Co., Chicago, Ill. "Jeanne." (See page 251.)
 Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill. "Willspark."
 Auto Accessories & Sales Co., 1688 Madison Ave., New York, N. Y.
 Auto Spark Indicator Co., 250 Devonshire St., Boston, Mass.
 Automat-Co—See Automotive Material Co.
 Automotive Material Co., 451 E. Ohio St., Chicago, Ill. "Automat-Co."
 Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo. "Black Diamond."
 Beard Auto-Lift Co., 718 Vanburen St., Auburn, Ind.
 Ben-Wat Corp., Jamesburg, N. J.
 Bigelow—See Universal Mfg. & Sales Co.
 Bingham Perfected Spark Plugs, 324 Mulberry St., Rockford, Ill. (See page 647.)
 Black Diamond—See Banner Accessory Mfg. Co.
 Brosnan Co., 22½ E. Court St., Springfield, Mass.
 Bunch & Co., Marshall, Mo. "Gottospark."
 Chance Co., Centralia, Mo. "Sparklets."
 Colby Co., G. E. 2-6 N. Eighth Ave., Maywood, Ill. "For-Do."
 D-B-Q Mfg. Co., 307 Stratford Ave., Bridgeport, Conn.
 Delco Mfg. Co., Seventh & Chestnut Sts., St. Louis, Mo.
 Durham Co., P. J., 244 W. 49th St., New York, N. Y.
 Emo Laboratories, 2255 N. Illinois St., Indianapolis, Ind.
 For-Do—See Colby Co.
 Fry Mfg. Co., S. 1024 Perry St., Spokane, Wash.
 Geoffroy—See General Machine Co.
 General Machine Co., 227 Eddy St., Providence, R. I. "Geoffroy."
 Gottospark—See Bunch & Co.
 H. E. C.—See Hercules Electric Corp.
 Harrington Co., O. C., 4138 Fillmore St., Chicago, Ill.
 Hartenstein, R. P., 542 S. Dearborn St., Chicago, Ill. "Utility."
 Hercules Electric Corp., 161 Massachusetts Ave., Boston, Mass. "H. E. C."
 Herz, 182 Locust Ave., New York, N. Y. "Oscillum." (See page 682.)
 I. X. L.—See Universal Mfg. & Sales Co.
 Instanto—See Jackson & Co.
 Jackson & Co., 139 N. Clark St., Chicago, Ill. "Instanto."
 Jeanne—See American Automatic Devices Co.
 Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.
 Jump Spark Co., 811 American Bldg., Baltimore, Md. (See page 649.)
 Marvel—See Universal Mfg. & Sales Co.
 Mechanical Lathe Co., 2411 S. Springfield Ave., Chicago, Ill.
 Meyer Auto Accessory Co., 767-71 20th St., Detroit, Mich.
 Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
 Motor Ignition Corp., 414 Broadway, Albany, N. Y.
 National Manufacturing Utilities Co., Manhattan Bldg., Chicago, Ill. "Nu Static." (See page 645.)
 Nu Static—See National Manufacturing Utilities Co.
 Oscillum—See Herz.
 Peck, C. H., 2154 N. Carlisle St., Philadelphia, Pa.
 Pittsburgh Electric Specialties Co., 396 Broadway, New York, N. Y.
 Plug Test Co., 738 Broad St., Newark, N. J. "Simplex."
 Pronto Mfg. & Sales Co., 706 S. 24th St., Omaha, Neb.
 Quincy & Schroeder, 256 W. 60th St., New York, N. Y. (Sole Agents for Sure Spark Ignition Corp., Indianapolis, Ind. "Shur-spark.") (See page 405.)
 Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans.
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky.
 Rutledge Repair & Engr. Co., Uel Alvin, 1407 E. Tenth St., Charlotte, N. C.
 S. O. S. Ignition Co., 797 Glenmore Ave., Brooklyn, N. Y.
 Scott Corp., 1534 W. Lake St., Chicago, Ill.
 Sure Spark Ignition Co.—See Quincy & Schroeder.
 Shursparc—See Quincy & Schroeder.
 Simplex—See Plug Test Co.
 Smith & Gunn, 22-26 E. Broad St., Burlington, N. J.
 Sparklets—See Chance Co.
 Speyer Mfg. Co., 53 Hope St., Brooklyn, N. Y.
 Standard Appliance Co., 608 Chestnut St., Philadelphia, Pa. "Wilkes."
 Universal Mfg. & Sales Co., 552 W. Harrison St., Chicago, Ill. "Marvel," "I. X. L.," "Bigelow."
 Utility—See Hartenstein, R. P.
 Van Kerr Co., 3160 N. Clark St., Chicago, Ill.
 Viktry Sales Co., 389 Fifth Street, Milwaukee, Wis. (See page 238.)
 Wilkes—See Standard Appliance Co.
 Willspark—See Armand Machine Works.
 Wizard Arc Spark Plug Co., Wainwright Bldg., St. Louis, Mo.
 X-Ray Plug Detector Co., Pleasant Lake, Ind.

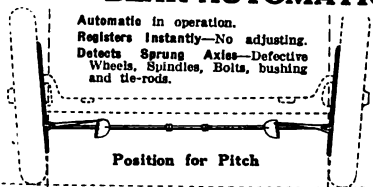
GARAGE AIR COMPRESSORS—See Compressors, Garage Air

GARAGE CANS—See Cans, Gasoline; also Cans, Waste

Everything is listed under the NOUN or principal word

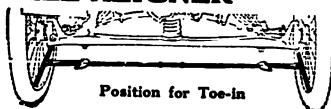
BEAR AUTOMATIC WHEEL ALIGNER

Automatic in operation.
Registers instantly—No adjusting.
Detects Sprung Axes—Defective
Wheels, Spindles, Bolts, bushing
and tie-rods.



Position for Pitch

TWO
IN
ONE



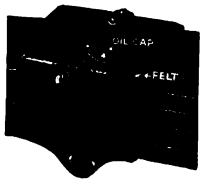
Position for Toe-in

The Dials are very simple so that anyone can read them—each line on the dial representing $\frac{1}{4}$ inch on the wheel. The arrows and dials will show when the alignment is correct.
Instruction Card furnished with each instrument, giving a list of the popular makes of cars, showing the proper Pitch and Toe-in of their front wheels. This information is very valuable and is alone worth the price of the instrument.

List Price, Each, \$15.00. Dealer's Discount, 25%.

BEAR MFG. CO., Rock Island, Ill.

Improved Spring Oilers



35c
each

Our Improved Spring Oilers are a neat oiling device; prevent auto springs from breaking and squeaking. Made in all sizes and will fit all makes of cars. Jobbers and Dealers, write for our Spring Oilier catalogue; large sales and good discount.

IMPROVED GAUGE MFG. CO.
105 Canal St. Syracuse, N. Y.

WATCH YOUR

NAGEL AMMETER

The dependability of the Nagel Ammeters on more than 2,500,000 motor cars has built an owner satisfaction that is reflected in Nagel's leadership in this industry.



THE W.G. NAGEL ELECTRIC CO.
TOLEDO, OHIO



SHURSPARC Eliminates All Spark Plug Trouble

Half the pleasure of motoring is denied the motorist who depends only on the usual source of ignition.

Frequent stalling, constant speed shifting in crowded thoroughfares—these are the penalties he pays for inadequate sparking.

But add Shursparc, the remarkable Ignition Auxiliary Device, and all these troubles are forgotten. Shursparc produces a spark that crashes into the



mixture with violent intensity, firing plugs that are fouled and even those that are broken. It increases power and economizes on fuel, not one atom of gas being wasted.

Dealers: We help you make sales by referring inquiries to our agents. Write for exclusive franchise in your locality.

Owners: If your Dealer is out of stock, write direct.

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256 West 69th Street
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Distributor

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Distributor

New England — The Fleo Co., 6 Beacon St., Boston, Mass.

Please mention The Automobile Trade Directory

GARAGE DOOR HANGERS—See Hangers and Hinges, Garage Door

GARAGE DOOR HINGES—See Hangers and Hinges, Garage Door

GARAGE DOOR HOLDERS—See Holders, Garage Door

GARAGE DOOR OPENERS—See Holders, Garage Door; also Openers, Electric Garage Door

GARAGE DOORS—See Doors, Special Garage

GARAGE ELEVATORS—See Elevators, Garage

GARAGE FIRE EXTINGUISHERS—See Extinguishers, Garage Fire

GARAGE GASOLINE PUMPS—See Tanks, Gasoline Storage

GARAGE GREASE GUNS—See Guns, Portable Garage Grease

GARAGE HEATERS—See Heaters, Special Garage

GARAGE JACKS—See Jacks, Special

GARAGE TIRE PUMPS—See Compressors, Garage Air

GARAGES, Portable

Aladdin Co., Bay City, Mich.

Anchor Corrugating Construction Co., 140 Washington St., New York, N. Y.

Ashley Steel Building Co., 1790 Broadway, New York, N. Y. "National."

Austin Co., 16112 Euclid Ave., Cleveland, O. "Steelspan."

Bossert & Sons, Louis, 1335 Grand St., Brooklyn, N. Y.

Brooks-Skinner Co., 10-50 Bridge St., North Weymouth, Mass.

Butler Mfg. Co., 1224 Grand Ave., Kansas City, Mo. "Round Ruff."

Canton Metal Ceiling Co., 2100 Harrison Ave., S. W., Canton, O.

Case Mfg. Co., 214-16 N. Mechanic St., Jackson, Mich.

Catherman, J. A., Beaver Springs, Pa.

Chesbro-Whitman Co., 1167 First Ave., New York, N. Y.

Chubb Garage Building Co., 1829 Allendale Ave., Cleveland, O.

Columbian Steel Tank Co., 1519-1625 W. 12th St., Kansas City, Mo.
(See page 849.)

Davis-Watson Mfg. Co., 9-11 Foundry St., Nashua, N. H.

Dexter Lumber Co., Norwood, O.

Diamond Hardware Mfg. Co., 224 Fourth Ave., Pittsburgh, Pa.

Dow Co., Louisville, Ky. (See page 157.)

Easibilt—See Hyde Park Lumber Co.

Eslien Sheet Metal Works, 999-1001 30th St., Milwaukee, Wis.

Fargo Cornice & Ornament Co., 1002-04 Front St., Fargo, N. Dak. "Rusk."

Farrar Lumber Co., Dalton, Ga.

Garage Construction Co. of Pittsburgh, Oliver Ave. & Grant St., Pittsburgh, Pa.

Gold Bond—See Mershon & Morley Co.

Gordon Mfg. Co., Middletown, O.

Greis Co., Andrew, 285-27 W. 19th St., New York, N. Y.

Harry Steel Co., O. K., 2323-25 Papin St., St. Louis, Mo.

Hoboken Garage Mfg. Co., 74 Bloomfield St., Hoboken, N. J.

Hodgson Co., E. F., 71 Federal St., Boston, Mass. "Wigwam."

Huttig Sash & Door Co., 1206 S. Vandeventer Ave., St. Louis, Mo.

Hyde Park Lumber Co., Burch Ave. & N. & W. R. R., Cincinnati, O. "Easibilt."

Hydraulic Steelcraft Co. of The Hydraulic Steel Co., Hydraulic Ave., Cleveland, O.

Karr Portable House Co., 2554 W. Irving Park Blvd., Chicago, Ill.

Knapp Portable-Permanent Building System, 335 Broadway, New York, N. Y.

Kolb Bldg. Co., 39 Church St., New York, N. Y.

Lewis Mfg. Co., 23rd St. & Michigan Ave., Bay City, Mich.

Manchester Mfg. Co., 1210 S. Vandeventer Ave., St. Louis, Mo.

Mecco—See Moeschl-Edwards Corrugating Co Mershon & Morley Co., Saginaw, Mich. "Gold Bond."

Metal Shelter Co., 50 Church St., New York, N. Y. "Pruden."

Miller Mfg. Co., 8000 Alabama Ave., St. Louis, Mo.

Millmade Construction Co., Portland, Ore.

Moeschl-Edwards Corrugating Co., Eighth & Ninth Sts., Covington, Ky. "Mecco."

Molster & Co., M., 3221 N. Fifth St., Philadelphia, Pa.

National—See Ashley Steel Building Co.

Newport Rolling Mill Co., Newport, Ky.

Pinyoun & Son, F. C., 2526 Carnegie Ave., Cleveland, O.

Pro-Slate Panel Buildings, 76th & Laflin Sts., Chicago, Ill.

Pruden—See Metal Shelter Co.

Pruden Co., C. D., Warner, Dock & Bayard Sts., Baltimore, Md. "Prudential," "Quixet."

Prudential—See Pruden Co.

Quixet—See Pruden Co.

Riverside Mfg. Co. 152-66 Riverside Ave., Newark, N. J.

Round Ruff—See Butler Mfg. Co.

Rusk—See Fargo Cornice & Ornament Co.

St. Johns Portable Building Co., St. Johns, Mich.

Scholes Bros., 1241 Rosedale St., N. S., Pittsburgh, Pa.

Sheet Metal Products Co., Duluth, Minn.

Skinner Co., Brooks, 10-33 Bridge St., North Weymouth, Mass.

Springfield—See Thayer Portable House Co. Steel Fabricating Co., Michigan City, Ind. "Stefco."

Steelspan—See Austin Co.

Stefco—See Steel Fabricating Co.

Taylor Mfg. Co., 219 Glenridge Ave., Montclair, N. J.

Thayer Portable House Co., Ralston St., Keene, N. H. "Springfield."

Togan-Stiles Co., Grand Rapids, Mich.

U. S. Portable Building Co., 115 Broadway, New York, N. Y.

Wigwam—See Hodgson Co.

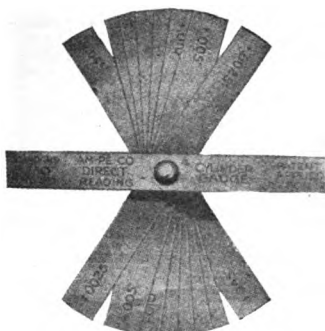
GAS BAGS—See Bags, Rubber Gas

GAS BURNERS—See Burners, Acetylene

GAS GENERATORS—See Generators, Acetylene

Everything is listed under the NOUN or principal word

For Accurate Cylinder Measurements



THE **AM-PE-CO** DIRECT READING CYLINDER GAUGE

GUARANTEED ACCURATE
TO WITHIN .00025"

Simple - Quick - Convenient

AM-PE-CO SALES CO., Marshalltown, Iowa

RE-ATOMIZER

BALL & BALL PATENT

"Makes Bad Gasoline Good"

Better Distribution - Less Trouble

Ford \$3.50
Model

Dodge \$3.75
Model

FLOMETER

"Miles per gallon at a glance"

A dash instrument registering the actual consumption of gas at any speed, at all times. Anything out of order shows up in increased use of gasoline thru the FloMeter.



DETROIT

1896

1921

DEALERS!

You Can Sell An

AKURET

Oil Gauge

To

Every Ford Owner

To Whom You Sell Oil

OVER 350 JOBBERS HAVE IT

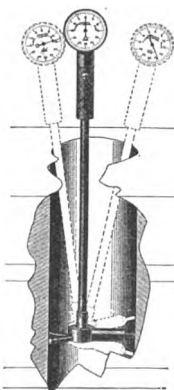
See yours or write direct

Dept. A. D.,

WALLACE MOTOR PRODUCTS CORP.

467 Washington St., New York

Federal Cylinder Gauge With Dial Out in the Open



**Detects Tapered,
Scored or Out-of-
Round Cylinders**

The Federal Cylinder Test Gauge fills the long-felt want for an instrument that will indicate with absolute accuracy and with the greatest possible convenience the size and concentricity of any engine cylinder throughout its entire length.

It is made in two models—Model A, a built-up gauge for testing a variety of diameters, and Model B, with centralizing device for measuring cylinders of a standard size. Where it is necessary to set the gauge accurately to a standard diameter a "Master" can be furnished when specified.

*Write for Cylinder
Gauge Bulletin
No. A3*

Please Specify When Requesting
Quotations:

1. What is the diameter or range of cylinders to be measured?
2. Do you wish Model A or B?
3. Do you need Master Gauges? What diameter? How many?

Federal Products Corporation
383 Harris Ave. Providence, R. I.

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GAS LAMPS—See Lamps, Acetylene
GAS PLIERS—See Pliers, Combination
GAS PURIFIERS—See Purifiers, Acetylene Gas

GAS TANK KEYS—See Keys, Acetylene
GAS TANKS—See Tanks, Acetylene
GAS TUBING CONNECTIONS—See Connections, Gas Tubing

GASKET CEMENT—See Cement, Gasket
GASKET CUTTERS—See Cutters, Washer or Gasket

GASKET SHELLAC—See Cement, Gasket
GASKETS, ASBESTOS—See Packing, Asbestos

GASKETS, COMPOSITION—See Packing

GASKETS, COPPER—See Gaskets, Metallic

GASKETS, COPPER, FOR FORDS—See Gaskets, Cylinder Head

GASKETS, CORK—See Washers, Cork

GASKETS, Cork, for Fords

Acco—See Armstrong Cork Co.
Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 373.)
Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa. "Acco."
Eureka—See Paddock Cork Co.
Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 937.)
Fieldco—See Field & Co.
Jointite—See Mundet & Son.
Mundet & Son, L., S. 11th & Berry Sts., Brooklyn, N. Y. "Jointite." (See page 411.)
Paddock Cork Co., 1209-17 De Kalb Ave., Brooklyn, N. Y. "Eureka." (See page 933.)

GASKETS, Cylinder Head and Valve Cap, for Fords

(Copper—Asbestos Gaskets)

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "McKim" and "Never-Leak" Gaskets.) (See page 113.)
Fitzgerald Mfg. Co., Torrington, Conn. "Never-leak." (See page 411.)
McCord Mfg. Co., Detroit, Mich. "McKim." (See page 409.)
McKim—See McCord Mfg. Co.
Never-Leak—See Fitzgerald Mfg. Co.
Universal Gasket & Mfg. Co., 2901 S. 48th St., Cicero, Ill.
Victor Mfg. & Gasket Co., 5750 Roosevelt Rd., Chicago, Ill.

GASKETS, FELT—See Washers, Felt

GASKETS, Felt, for Fords

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill. (See page 373.)

Algo—See Auburn Leather Goods Co.
Atlantic Felt Cutting Co., 93rd St. & Fourth Ave., Brooklyn, N. Y.
Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Algo"
Booth Felt Co., 463-73 19th St., Brooklyn, N. Y. (See page 375.)
Brawley, T. R., 272-74 20th St., Brooklyn, N. Y. "Rounds." (See pages 375 and 935.)
Fel-Pro—See Felt Products Mfg. Co.
Felt Products Mfg. Co., 2419 W. 14th St., Chicago, Ill. "Fel-Pro."
Felters Co., Millbury, Mass. (See page 933.)
Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 937.)
Fieldco—See Field & Co.
Lyons Felt Co., 338 Myrtle Ave., Brooklyn, N. Y.
Monarch Felt Works, 39-45 York St., Brooklyn, N. Y.
Rhocom—See Rhodes & Co.
Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Rhocom."
Rounds—See Brawley, T. R.
Western Felt Works, 4031-4115 Ogden Ave., Chicago, Ill.

GASKETS, FIBRE—See Fibre, Hard

GASKETS, FIBROUS—See Packing, Asbestos

GASKETS, Fibrous for Fords

Consolidated Packing & Supply Co.—See Eckhouse, Horace H.
Eckhouse, Horace H., 1834 Broadway, New York, N. Y. (Sales Department for Consolidated Packing & Supply Co., New York, N. Y. "Wisold.") (See page 651.)
Wisold—See Eckhouse, Horace H.

GASKETS, Headlight Lenses

Flexo Lens Protector Co., Camden, N. J.

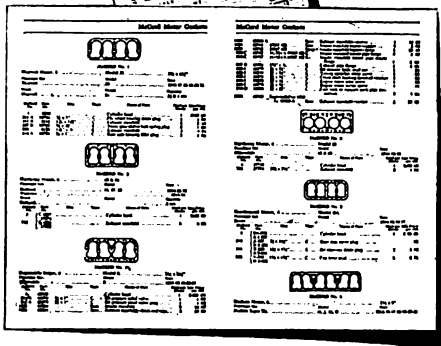
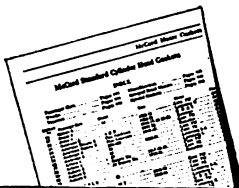
GASKETS, Metallic

(Copper and Copper-Asbestos)

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "McKim" and "Never-Leak" Gaskets.) (See page 113.)
Evertight—See Gasket Co. of America.
Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for "Never-Leak" Gaskets.) (See page 429.)
Fitzgerald Mfg. Co., Torrington, Conn. "Never-leak." (See page 411.)
Gasket Co. of America, 525 W. Van Buren St., Chicago, Ill. "Kantleak," "Evertight."
Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."
Guillot Gasket Mfg. Co., Wm., 2922 Belmont Ave., Chicago, Ill.
Kantleak—See Gasket Co. of America.
McCord Mfg. Co., Detroit, Mich. "McKim." (See page 409.)
McKim—See McCord Mfg. Co.
Mikecell Brothers Company, 156 N. La Salle St., Chicago, Ill. (See page 530.)
Never-Leak—See Fitzgerald Mfg. Co.

Everything is listed under the NOUN or principal word

Partial List of **McCORD GASKETS FOR PASSENGER CARS**

[illegible]

The new McCord catalog, just off the press, contains 72 pages; 233 illustrations; and lists all copper asbestos gaskets for the more popular motors.

This Gasket Guide--Gratis

Tie up to the McCord Jobber— His Service Is Complete

McCORD MANUFACTURING CO., Inc.

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Eastern Sales Branch, 110 First Avenue, Long Island City, N.Y.

**Manufacturers of McCord Automobile Radiators and
McCord Force-Feed Lubricators**

McCord

GASKETS

Please mention The Automobile Trade Directory

GASKETS, Metallic (Continued)

Phoenix Specialty Mfg. Co., 48-50 Duane St., New York, N. Y.
 Right—See Gasket Supply Co.
 United States Indestructible Gasket Co., 50 Church St., New York, N. Y.
 Universal Gasket & Mfg. Co., 2901 S. 48th St., Cicero, Ill.
 Victor Mfg. & Gasket Co., 5750 Roosevelt Rd., Chicago, Ill.

GASKETS, METALLIC, FOR FORDS—See Gaskets, Cylinder Head

GASKETS, RUBBER—See Packing, Rubber

GASKETS, VALVE CAP—See Gaskets, Metallic

GASKETS, VALVE CAP, FOR FORDS—See Gaskets, Cylinder Head

GASOLINE, Automobile

American Oil Co., American Bldg., Baltimore, Md. "Amoco."

Amoco—See American Oil Co.

B-Zol—See Koppers Products Co.

Emlenton Refining Co., Emlenton, Pa.

Empire Refineries, Unity Bldg., Tulsa, Okla.

Energene Refining & Mfg. Co., The Arcade, Cleveland, O.

Gulf Refining Co., Pittsburgh, Pa.

Indian Refining Co., 244 Madison Ave., New York, N. Y.

Keystone—See Tiona Refining Co.

Koppers Products Co., 356 Union Arcade, Pittsburgh, Pa. "B-Zol."

Marathon—See Transcontinental Oil Co.

National Refining Co., National Bldg., Cleveland, O. "White Rose."

Ohio Refining Co., Laidlaw Ave., Cincinnati, O. "Pep."

Pennant—See Pierce Oil Corp.

Pep—See Ohio Refining Co.

Petroleum Products Co., 39th St. & B. & O. R. R., Pittsburgh, Pa. "Vigorite."

Petroleum Refining Co., Latonia, Ky.

Pierce Oil Corp., 25 Broad St., New York, N. Y. "Pennant."

Powero—See Tide Water Oil Co.

Pure Oil Co., Fifth & Chestnut Sts., Philadelphia, Pa.

Socony—See Standard Oil Co. of N. Y.

Sloane & Zook, 101 Main St., Bradford, Pa.

Standard Oil Co. of N. Y., 26 Broadway, New York, N. Y. "Socony."

Sterling Oil Corp., 608 Swan St., Buffalo, N. Y. "X-Tra."

Texaco—See Texas Co.

Texas Co., 17 Battery Pl., New York, N. Y. "Texaco."

Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Tydol," "Powero."

Tiona Refining Co., Madison Ave. & Belt Ry., Indianapolis, Ind. "Keystone."

Transcontinental Oil Co., Benedum-Trees Bldg., Pittsburgh, Pa. "Marathon."

Tydol—See Tide Water Oil Co.

Uller, C. C., Tidlooute, Pa.

Union Oil Co. of California, Union Oil Bldg., Los Angeles, Cal.

Ventura Refining Co., 458 S. Spring St., Los Angeles, Cal.

Vigorite—See Petroleum Products Co.

Waverly Oil Works Co., 54th St. & A. V. R. R., Pittsburgh, Pa.

White Rose—See National Refining Co.

X-Tra—See Sterling Oil Corp.

GASOLINE BURNERS—See Burners, Gasoline

GASOLINE CANS—See Cans, Gasoline

GASOLINE CARBURETERS—See Carbureters, Gasoline

GASOLINE COCK CONTROL RODS FOR FORDS—See Rods, Gasoline Cock Control

GASOLINE COCKS—See Cocks, Standard Pet; also Cocks, Spring Key

GASOLINE CONSUMPTION METERS—See Gages, Vacuum Tank

GASOLINE ECONOMIZERS—See Mixers, Economizers or Agitators and Auxiliary Air Valves

GASOLINE ENGINE GOVERNORS—See Governors, Gasoline Engine

GASOLINE ENGINE INDICATORS—See Indicators, Gasoline Engine

GASOLINE ENGINES—See Engines, Gasoline

GASOLINE FEED PUMPS—See Systems, Magnetic Pump

GASOLINE FEED SYSTEMS—See Systems, Magnetic Pump Gasoline; also Tanks, Vacuum; also, Regulators, Tank Pressure

GASOLINE FILTERS—See Strainers or Separators, Gasoline

GASOLINE FUNNELS—See Funnels, Metal

GASOLINE FURNACES—See Torches, Gasoline

GASOLINE GAGES—See Gages

GASOLINE LOCK VALVES—See Valves, Gasoline Lock

GASOLINE MIXERS—See Mixers, Economizers or Agitators, Fuel

GASOLINE MOTORS—See Engines, Gasoline

GASOLINE PUMPS—See Tanks and Systems, Gasoline

GASOLINE PURIFIERS—See Strainers or Separators, Gasoline

GASOLINE RECORDERS—See Recorders, Gasoline; also Recorders, Gasoline and Oil

GASOLINE RESERVE COCKS—See Valves, Two Way Tank

GASOLINE RESERVE COCKS FOR FORDS—See Cocks, Fuel Supply

GASOLINE RESERVE VALVES—See Valves, Two Way Tank

Everything is listed under the NOUN or principal word

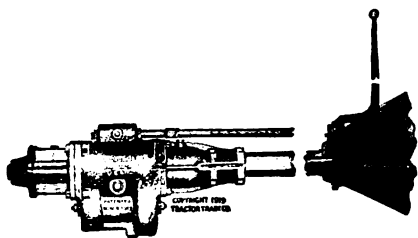
"MOORE" 4-SPEED TRANSMISSIONS

**for all Ford Cars and Trucks
provide an Intermediate Speed**

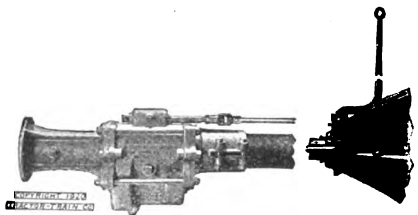
The No. 1 Passenger Car Model is built for all Model T Ford cars regardless of the type of body used. The Underdrive Ratio of this Model doubles the power of the Ford car, increasing its utility 100%. The Overdrive Ratio increases the road speed 20% without increasing the engine speed.

The No. 5 Truck Model is of heavy construction suitable for commercial service on the Ford One Ton Worm-Drive Truck ONLY. The Underdrive Ratio doubles the power for heavy work. The Overdrive Ratio increases the road speed 40%, or from 16 m.p.h. to 25 m.p.h. without increasing the engine speed.

"MOORE" 4-Speed Transmissions reduce gas and oil consumption, and minimize wear and tear on the Ford mechanism.



**NO. 1
PASSENGER CAR MODEL**



**NO. 2
TRUCK MODEL**

Literature and prices on request

TRACTOR-TRAIN COMPANY

Manufacturers of "MOORE" Transmissions

1344 WALL STREET

LOS ANGELES, CALIFORNIA

Please mention The Automobile Trade Directory

GEARS, Blank (Continued)

- Ganschow Co., Wm., 1001 W. Washington St., Chicago, Ill. (See page 420.)
- Gill & Sons Forge & Machine Works, P. H. Lorraine & Otsego Sts., Brooklyn, N. Y.
- Hartford Machine Screw Co., Hartford, Conn. (See page 741.)
- Jefferson Forge Products Co., Detroit, Mich. (See page 947.)
- Ladish Drop Forge Co., Cudahy, Wis. (See page 385.)
- Link-Belt Co., Indianapolis, Ind. (See page 233.)
- Machinery Forging Co., 5450 Hamilton Ave., Cleveland, O.
- McDougall & Potter Co., 606-12 W. 55th St., New York, N. Y.
- McInnes Steel Co., Corry, Pa.
- Michigan Screw Co., 506 S. Hosmer St., Lansing, Mich.
- New England Forge Co., 9 Plymouth St., Worcester, Mass.
- Nilson-Miller Co., 50 13th St., Hoboken, N. J. (See page 719.)
- Non-Ferrous Alloys Co., 8162 W. Fort St., Detroit, Mich.
- Pan Motor Co., St. Cloud, Minn.
- Steel Forgings Co., Brotherton Rd., Cincinnati, O.
- Washington Steel & Ordnance Co., Washington, D. C. "Capitol."
- Western Automatic Machine Screw Co., Elyria, O.
- Wyman-Gordon, Worcester, Mass. (See back bone.)

GEARS, Differential*(Complete Differential Units)*

- Adco—See American Die & Tool Co.
- Allen—See U. S. Axle Co.
- American Die & Tool Co., Reading, Pa. "Adco." (See page 420.)
- Brown-Lipe-Chapin Co., Syracuse, N. Y. (See page 415.)
- Crofoot Gear Works, Hyde Park Ave., at Revendille, Boston, Mass. (See page 421.)
- Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich.
- Cullman Wheel Co., 1356 Altgeld St., Chicago, Ill. (See page 801.)
- Elbertz—See Everitt Co.
- Everitt Co., B. F., 294 E. Jefferson Ave., Detroit, Mich. "Elbertz."
- Fairfield Mfg. Co., Earl Ave., Lafayette, Ind.
- Frost Gear & Forge Co., Jackson, Mich. (See page 386.)
- Jones Gear Co., 965 Wayside Rd., Cleveland, O.
- New Process Gear Corp., Syracuse, N. Y.
- Powrlok Co., 1107 E. 152nd St., Cleveland, O.
- Russel Motor Axle Co., North Detroit, Mich.
- Standard Equipment Co., Lorain Ave. & W. 100th St., Cleveland, O.
- U. S. Axle Co., Pottstown, Pa. "Allen." (See page 81.)
- Van Dorn & Dutton Co., 2978 Woodhill Rd., Cleveland, O.
- Warner Gear Co., Muncie, Ind. (See page 410.)
- Warner Mfg. Co., Toledo, O.
- Warren Gear Products Co., Warren, Pa.
- Weekes-Hoffman Co., Syracuse, N. Y. (See page 423.)

GEARS, Differential, for Fords*(Including both standard and special differentials)*

- Allen—See U. S. Axle Co.
- Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.
- Ka-Wood Gear Co., 2281 Superior St., Detroit, Mich.
- Powrlok Co., 1107 E. 152nd St., Cleveland, O.
- Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
- U. S. Axle Co., Pottstown, Pa. "Allen." (See page 81.)
- Weekes-Hoffman Co., Syracuse, N. Y. (See page 423.)

GEARS, DIFFERENTIAL TRACTOR—See Gears, Tractor Differential**GEARS, FABRIC—See Gears and Pinions, Rawhide, Fibre and Fabric.****GEARS, FIBRE—See Gears and Pinions, Rawhide, Fibre and Fabric; also Gears and Pinions, Speedmeter.****GEARS, METAL—See Gears and Pinions, Metal****GEARS, RAWHIDE — See Gears and Pinions, Rawhide****GEARS, RING—Gears, Steel Ring****GEARS, Special Ratio Rear Bevel, for Fords***(Rear bevels and pinions of higher ratio than standard for increasing speed of car for racing purposes)*

- Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors) (See page 121.)
- Craig-Hunt—See Speedway Engineering Co.
- Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich.
- D-B-Q Mfg. Co., 307 Stratford Ave., Bridgeport, Conn.
- Detroit Radiator & Specialty Co., 4825 Woodward Ave., Detroit, Mich.
- Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers) (See page 415.)
- James Mfg. Co., D. O., 1114-24 W. Monroe St., Chicago, Ill.
- Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Milwaukee Forge & Machine Co., Milwaukee, Wis. "M. F." (See pages 136 and 389.)
- MF—See Jonas C. N. & F. W.
- Milwaukee Forge & Machine Co.—See Jonas, C. N. & F. W.
- Puritan Machine Co., 70 Puritan Bldg., Detroit, Mich. (See page 623.)
- Schnerr Co., J. J., 790 Golden Gate Ave., San Francisco, Cal. (See page 420.)
- Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig Hunt." (See page 381.)
- Weekes-Hoffman Co., Syracuse, N. Y. (See page 423.)
- Weinberg, Samuel, Scranton, Pa. (Distributor.) (See page 423.)

GEARS, SPEEDOMETER—See Gears and Pinions, Rawhide

Everything is listed under the NOUN or principal word

The "Big Ben" of Motordom
HARRIS LO-PRESSURE

TIRELARM

The motor world heralds the advent of a new accessory that is destined for a notable career.

A precision instrument that goes on the valve stem like a dust cap affording a **VISIBLE, AUDIBLE SIGNAL** when the air in the tire becomes 10 or 12 pounds lower than the predetermined pressure.

It is the most important invention of the times and will find ready sale wherever shown.

Now ready for marketing through jobbers and dealers. Attractive sales literature, window cards, counter display stands and dealer helps supplied. Write for complete information.

HARRIS ACCESSORY CO.
Manufacturers and Distributors
Greenville, South Carolina

It Saves Tires

Automotive Equipment SPECIALTIES FOR FORD

As follows

Special Ratio Gears
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F. H. S.-Ball Thrust Bearings
Connecting Rods
Radius Rods
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(Ford—Maxwell—Dodge—Chevrolet)
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Axle Shafts
Piston Rings
Differential Cases

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DIFFERENTIALS
DRIVE GEARS DRIVE PINIONS
BROWN-LIPE-GEAR
TRANSMISSIONS
CLUTCHES CONTROL SETS

Both at Syracuse, N.Y.

Please mention The Automobile Trade Directory

GEARS, Starter Transmission

(For automatically meshing pinion on starter motor with fly wheel gear)

Bendix—See Eclipse Machine Co.

Eclipse Machine Co., Elmira, N. Y. "Bendix." (See page 439.)

GEARS, Steel Ring

(For attaching to flywheel for self-starter)

Adapt Machinery Co., 1624-32 S. Wabash Ave., Chicago, Ill.

Chevrolet Bros. Mfg. Co., Tenth & Lafayette Sts., Indianapolis, Ind.

Crago Gear & Machine Works, 1416 Walnut St., Kansas City, Mo.

Green Engineering Co., Main St. & Burns Ave., Dayton, O.

Huetter Machine & Tool Co., 537-49 Kentucky Ave., Indianapolis, Ind.

Jansen Machine Co., Theo. W., 741 21st St., Des Moines, Ia.

K-B—See Kirk-Barber Co.

Kauffman Metal Products Co., Bellefontaine, O. (See page 359.)

Kent Auto Parts Co., 1743 Logan St., Denver, Colo.

Kirk-Barber Co., 2217 Calumet Ave., Chicago, Ill. "K-B."

Sattler's Machine Shops & Works, 1601 Spring Garden St., Philadelphia, Pa.

Schnerr Co., J. J., 709 Golden Gate Ave., San Francisco, Cal. (See page 429.)

Trindl Co., Wabash Ave. & 20th St., Chicago, Ill. (See page 637.)

GEARS, Steering

(Complete Steering Gear Units)

Alling-Lander Co., Basket St., Sodas, N. Y.
C. A. S. Products Co.—See C. A. S. Engineering Co.

C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for C. A. S. Products Co., Columbus, O.)

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)

Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich.

Ditweller Mfg. Co., Primrose St., Gallon, O.

Finance Service Corp., 4505 Ravenswood Ave., Chicago, Ill. "Jones."

Gemmer Mfg. Co., 2137 Merrick St., Detroit, Mich.

Horat Mfg. Co., J., Lafayette, Ind. (See page 420.)

Jacox—See Saginaw Products Co.

Jones—See Finance Service Corp.

Keystone-Hindley Gear Co., 20th St. & Indiana Ave., Philadelphia, Pa.

Lavine Gear Co., 60-80 Keefe Ave., Milwaukee, Wis.

Muncie Products Division of General Motors Corp., 1220 W. Eighth St., Muncie, Ind.

Ohmer Fair Register Co., Bolender & Big Four R. R., Dayton, O.

Ross Gear & Tool Co., 800 Heath St., Lafayette, Ind. (See page 417.)

S & W—See Schweppe & Wilt Mfg. Co.

Saginaw Products Co., Hamelton & Moore Sts., Saginaw, Mich. "Jacox."

Schweppe & Wilt Mfg. Co., Mt. Elliot & Conant Ave., Detroit, Mich. "S. & W."

Steering Gear & Parts Co., 700 Harper Ave., Detroit, Mich.

Superior Machine & Engineering Co., 451 E. Fort St., Detroit, Mich.

Wohlrab Gear Co., 1221 Frederick St., Racine, Wis.

GEARS, Steering, for Fords

Alling-Lander Co., Basket St., Sodas, N. Y.
Columbia Carburetor Co., 111 W. Monroe St., Chicago, Ill. (See page 193.)

E-Z Steer—See Hansen-Dennett-Winner Co.

Hansen-Dennett-Winner Co., Port Washington, Wis. "E-Z Steer."

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

Ospeco—See Michigan Auto Products Co.
Spaulding Mfg. Co., 933 Spring St., Grinnell, Ia.

Sprague Mfg. Co., E. H., 914-22 N. 18th St., Omaha, Neb.

Universal Mfg. Co., 2633 Randolph St., Lincoln, Neb.

GEARS, STEERING TRACTOR—See Gears, Tractor Steering

GEARS, TRACTOR—See Gears, Tractor Differential; also Gears, Tractor Steering; also Gears, Tractor Transmission

GEARS, Tractor Differential

Allegheny Gear Works, Chateau & Page Sts., Pittsburgh, Pa.

Allen—See U. S. Axle Co.

Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.

Powrlok Co., 1107 E. 152nd St., Cleveland, O.

U. S. Axle Co., Pottstown, Pa. "Allen." (See page 81.)

GEARS, Tractor Steering

Alling-Lander Co., Basket St., Sodas, N. Y.
Nuttall Co., R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.

Ross Gear & Tool Co., 800 Heath St., Lafayette, Ind. (See page 417.)

GEARS, Tractor Transmission

Allegheny Gear Works, Chateau & Page Sts., Pittsburgh, Pa.

Alling-Lander Co., Basket St., Sodas, N. Y.

Cotta Transmission Co., 2340 11th St., Rockford, Ill.

Coverl Gear Co., Lockport, N. Y. (See Inside Back Cover.)

Detroit Gear & Machine Co., 670 E. Woodbridge St., Detroit, Mich.

Foot Bros. Gear & Machine Co., 213 N. Curtiss St., Chicago, Ill. "I. X. L."

Fuller & Sons Mfg. Co., Kalamazoo, Mich.

Ganschow Co., Wm., 1001 W. Washington St., Chicago, Ill. (See page 429.)

I. X. L.—See Foot Bros. Gear & Machine Co.

Milwaukee Gear Co., 1222-24 Third St., Milwaukee, Wis.

Nuttall Co., R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.

Paragon Gear Works, 700 Gushman St., Taunton, Mass.

Pittsburgh Gear & Machine Co., 27th & Smallman Sts., Pittsburgh, Pa.

Everything is listed under the NOUN or principal word

ROSS STEERING GEARS

The superior and distinctive feature of Ross Steering Gears is the screw and nut mechanism, which transfers the rotation of the steering wheel to the steering arm. The nut completely envelops the screw so that the entire bearing surface of both screw and nut are utilized. Because of the easy steering, reliability and satisfactory service which these enormous bearing surfaces guarantee, Ross Gears are used as standard steering equipment by 166 different manufacturers, representing considerably over half the entire industry. This wonderful record has earned for them the distinction of being

*The Steering Gears that
Predominate on Motor
Trucks.*

**Fore and Aft
Steering Gear
Models
BM and BL**

**The
Nut
and
Discs**

The Trunnion Shaft

**The
Screw**

As the screw turns, the nut, which completely envelops it, travels up or down, rotating the cylindrical discs in their recesses. These discs, which hold the projecting arms of the trunnion shaft, rotate it in turn and move the steering arm forward or backward. Compare the enormous bearing surfaces of this screw and nut mechanism with other designs in which only three or four teeth are in contact at one time.

**Fore and Aft
Steering Gear
Model BU**

**Cross
Steering Gear
Models
BF, BB
and BA**

The illustrations show the three general designs in which Ross Steering Gears are made. These designs, in different sizes and with special fittings, adapt Ross Steering Gears to meet the requirements of any motor truck manufacturer.

*Write for catalog and for any
special information desired.*

ROSS GEAR & TOOL COMPANY 800 HEATH ST. LAFAYETTE, IND.

GEARS, Tractor Transmission (Continued)

Stork Motor Co., 1212 N. Niagara St., Saginaw, W. S., Mich.
 Turley Gear & Machine Co., 1505-11 N. Tenth St., St. Louis, Mo.
 Weekes-Hoffman Co., Syracuse, N. Y. (See page 423.)
 Wohlrab Gear Co., 1221 Frederick St., Racine, Wis.

GEARS, Transmission*(Complete Transmission Units)*

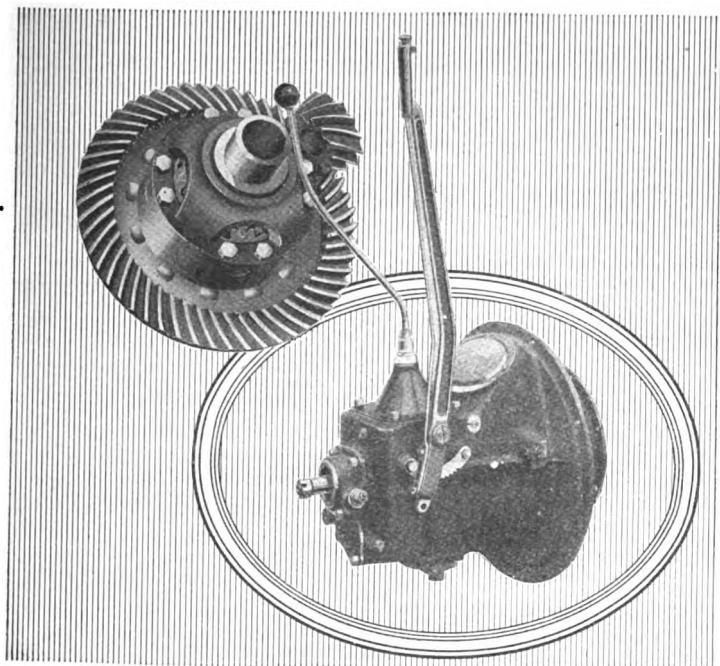
Adco—See American Die & Tool Co.
 Alling-Lander Co., Basket St., Sodas, N. Y.
 American Die & Tool Co., Reading, Pa. "Adco." (See page 420.)
 Ball—See New York Gear Works.
 Brown-Lipe Gear Co., Syracuse, N. Y. (See page 415.)
 C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Mechanics Machine Co., Rockford, Ill. "Rockford.")
 Campbell Transmission Co., Buchanan, Mich.
 Central Service Corp., 1807 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
 Cotta Gear Co., 117-27 Morgan St., Rockford, Ill.
 Cotta Transmission Co., 2340 11th St., Rockford, Ill.
 Covert Gear Co., Lockport, N. Y. (See Inside Back Cover.)
 Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich.
 Detroit Gear & Machine Co., 670 E. Woodbridge St., Detroit, Mich.
 Dundore Mfg. Co., 244 Orange St., Reading, Pa.
 Durston Gear Corp., 25 Multile St., Syracuse, N. Y. (See page 421.)
 Flexo-Motive Corp., McCormick Bldg., Chicago, Ill.
 Frost Gear & Forge Co., Jackson, Mich. (See page 386.)
 Fuller & Sons Mfg. Co., Kalamazoo, Mich.
 Generated Gear & Machine Co., 850 W. Atwater St., Detroit, Mich.
 Gleason Works, 1000 University Ave., Rochester, N. Y.
 Grant-Lees Gear Co., 2368 69th St., Cleveland, O.
 Jones Gear Co., 965 Wayside Rd., Cleveland, O.
 Light Mfg. & Foundry Co., Union & Queen Sts., Pottstown, Pa.
 Mechanics Machine Co., Ninth St. & 19th Ave., Rockford, Ill. "Rockford."
 Milwaukee Gear Co., 1222-24 Third St., Milwaukee, Wis.
 Muncie Gear Works, Muncie, Ind. (See page 425.)
 Muncie Products Division of General Motors Corp., 1220 W. Eighth St., Muncie, Ind.
 New York Gear Works, 56 Greenpoint Ave., Brooklyn, N. Y. "Ball."
 Pittsburgh Model Engine Co., Lexington Ave. & McPherson St., Pittsburgh, Pa.
 Rockford—See Mechanics Machine Co.
 Stork Motor Co., 1212 N. Niagara St., Saginaw, W. S., Mich.
 Superior Machine Tool Co., E. Differbaugh St., Kokomo, Ind.
 Superior Machine & Engineering Co., 451 E. Fort St., Detroit, Mich.

Syracuse Gear Co., 105 Grape St., Syracuse, N. Y.
 Turley Gear & Machine Co., 1505-11 N. Tenth St., St. Louis, Mo.
 Van Dorn & Dutton Co., 2978 Woodhill Rd., Cleveland, O.
 Warner Gear Co., Muncie, Ind. (See page 419.)
 Warner Mfg. Co., Toledo, O.
 Warren Gear Products Co., Warren, Pa.
 Weekes-Hoffman Co., Syracuse, N. Y. (See page 423.)
 Yuster Axle & Transmission Co. of America, South Bend, Ind.

GEARS, TRANSMISSION, FOR FORDS—See Gears, Auxiliary Transmission**GEARS, TRANSMISSION TRACTOR—See Gears, Tractor Transmission****GEARS and PINIONS, Metal***(Metal Gear cutting on contract to sample or blue print)*

Acme Gear Co., Seventh & Wood Sts., Philadelphia, Pa.
 Acme Gear Works, 45 Mills St., Astoria, N. Y.
 Adams Co., 295 Sixth St., Dubuque, Ia.
 Adco—See American Die & Tool Co.
 Albaugh-Dover Co., 2100 Marshall Blvd., Chicago, Ill.
 Alexander & Cox Co., 3358 Ogden Ave., Chicago, Ill.
 Allegheny Gear Works, Chateau & Page Sts., Pittsburgh, Pa.
 American Die & Tool Co., Reading, Pa. "Adco." (See page 420.)
 American Gear Co., 549 E. Illinois St., Chicago, Ill.
 Anderson Rolled Gear Co., Berea Rd. & L. S. & M. S. R. R., Cleveland, O.
 Arthur Co., 188 Front St., New York, N. Y.
 Automotive Gear Works, Atlanta, Ga. (See page 421.)
 Ball Gear & Machine Co., 56-58 Greenpoint Ave., Brooklyn, N. Y.
 Baush Machine Tool Co., 156 Wason Ave., Springfield, Mass.
 Behrendt, H. F., 22 Green St., Newark, N. J.
 Bilgram Machine Works, 1235 Spring Garden St., Philadelphia, Pa.
 Boston Gear Works (Norfolk Downs), Quincy, Mass.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Buttman Co., F. H., 10271 Berea Rd., Cleveland, O.
 Carpenter-Tow Gear Co., 67 25th St., Brooklyn, N. Y.
 Chicago Gear Mfg. Co., 2823-33 Fulton St., Chicago, Ill.
 Cincinnati Gear Co., 1835-33 Reading Rd., Cincinnati, O.
 Cleveland Worm & Gear Co., 1667 E. 40th St., Cleveland, O.
 Crofoot Gear Works, Hyde Park Ave. at Readville, Boston, Mass. (See page 421.)
 Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich.
 Currie & Son, J. B., 72 Adams St., Brooklyn, N. Y.
 Detroit Bevel Gear Co., 8130 Jos. Compau Ave., Detroit, Mich.

Everything is listed under the NOUN or principal word



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PROGRESS in Warner Gears runs parallel with the progress of automotive industry itself. Warner Gear Differential Units were in operation as far back as the year 1902. Clutches, transmissions and controls were brought out a few years later. Today the Warner Gear plant is one of the largest, most modern, most complete gear unit plants in the country and supplies gear units in more than 60 different makes of motor cars and trucks.

The Warner Gear Company is the only organization that manufactures clutches, transmissions, controls, and differentials for motor cars and trucks — the entire *gear system* necessary to apply, transmit and distribute driving power from motor to wheels.

Manufacturers who seek to buy driving gears as a complete and unified mechanism welcome this *system of gear units* made by Warner Gear — correlated and co-ordinated through 19 years of progress in gear making.

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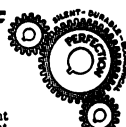
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PERFECTION gears have always been a synonym for silence. The fact that thousands of sets have given thousands upon thousands of miles of silent service are positive proof of their durability.

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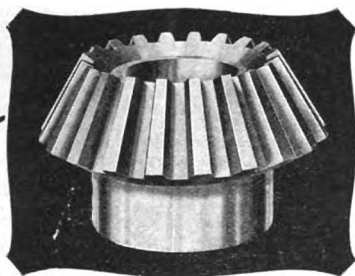
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Made in all types and sizes and in any quantity.

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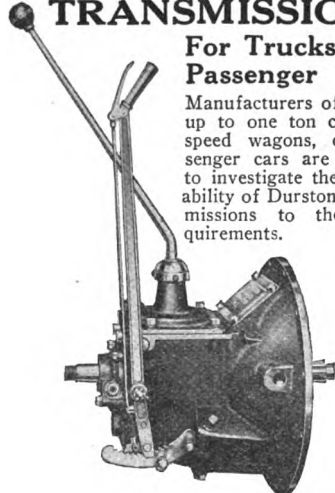
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Manufacturers of trucks up to one ton capacity, speed wagons, or passenger cars are invited to investigate the adaptability of Durston Transmissions to their requirements.



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GEARS and PINIONS, Metal (Continued)

- Detroit Gear & Machine Co., 670 E. Woodbridge St., Detroit, Mich.
 Dittmer Gear Mfg. Corp., 290 Grand St., Lockport, N. Y.
 Dundore Mfg. Co., 244 Orange St., Reading, Pa.
 Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.
 Fairfield Mfg. Co., Earl Ave., La Fayette, Ind.
 Federal Gear Co., 1754 E. 47th St., Cleveland, O.
 Flather Mfg. Co., E. J., 46 Spring St., Nashua, N. H.
 Foote Bros. Gear & Machine Co., 213 N. Curtiss St., Chicago, Ill.
 Front Gear & Forge Co., Jackson, Mich. (See page 386.)
 Ganachow Co., Wm., 1001 W. Washington St., Chicago, Ill. (See page 429.)
 Gear Grinding Machine Co., Conant Rd. & G. T. R. R., Detroit, Mich.
 General Machine Works, Lamour & Prospect Sts., York, Pa.
 Gleason Works, 1000 University Ave., Rochester, N. Y.
 Gould & Eberhardt, Colt & Chancellor Aves., Irvington, N. J.
 Grand Machine Co., 3456 S. Grand Ave., St. Louis, Mo.
 Grant Gear Works, 151 Pearl St., Boston, Mass.
 Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.
 Hindley Gear Co., 1105 Frankford Ave., Philadelphia, Pa.
 Indianapolis Tool & Mfg. Co., Indianapolis, Ind. (See page 425.)
 James Mfg. Co., D. O., 1114-24 W. Monroe St., Chicago, Ill.
 Johnson Gear Co., 735-37 Folsom St., San Francisco, Cal.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Milwaukee Forge & Machine Co., Milwaukee, Wis. "MFW.") (See pages 136 and 389.)
 Jones Gear Co., 965 Wayside Rd., Cleveland, O.
 Keystone-Hindley Gear Co., 96th St. & Indiana Ave., Philadelphia, Pa.
 Killington Machine Co., Industrial Bldg., Syracuse, N. Y.
 Lauer Machine Co., John, 620-26 St. Antoine St., Detroit, Mich.
 Levene Motor Co., 2200 Diamond St., Philadelphia, Pa. (See page 429.)
 Link-Belt Co., Indianapolis, Ind. (See page 233.)
 MF—See Jonas, C. N. & F. W.
 Machine Products Co., E. 179th St. & St. Clair Ave., Cleveland, O.
 Mead—See National Gear & Truck Wheel Corp.
 Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 423.)
 Meisselbach-Catucci Mfg. Co., 51-55 Stanton St., Newark, N. J.
 Michigan Gear & Engineering Co., 27 W. Woodbridge St., Detroit, Mich.
 Milholland Machine Co., 1102 W. 23rd, Indianapolis, Ind.
 Milwaukee Forge & Machine Co.—See Jonas, C. N. & F. W.
 Milwaukee Gear Co., 1222-24 Third St., Milwaukee, Wis.
 National Gear & Truck Wheel Corp., 405 Fulton Bldg., Pittsburgh, Pa. "Mead."
 Nattisch Gear Works, 451 Hudson Ave., Brooklyn, N. Y.
 New Process Gear Corp., Syracuse, N. Y.
 New York Gear Works, 56 Greenpoint Ave., Brooklyn, N. Y.
 Newark Gear Cutting Machine Co., 67-69 Prospect St., Newark, N. J.
 Nilson-Miller Co., 50 13th St., Hoboken, N. J. (See page 719.)
 Nuttall Co., R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.
 Ogdan Mfg. Co., Plymouth, Ind.
 Pacific Gear & Tool Works, 1035 Folsom St., San Francisco, Cal.
 Penmaid—See Pennsylvania Gear & Machine Co.
 Pennsylvania Gear & Machine Co., E. Tigea, Welkel & Janney Sts., Philadelphia, Pa. "Penmaid." (See page 425.)
 Philadelphia Gear Works, 1120 Vine St., Philadelphia, Pa.
 Pittsburgh Gear & Machine Co., 27th & Smallman Sts., Pittsburgh, Pa.
 Rex Mfg. Co., 655 Lieb St., Detroit, Mich.
 Ross Machine Co., 1213-15 W. Fourth St., LaFayette, Ind.
 Saunders Co., E. W., 192 Brighton Ave. (Allston), Boston, Mass.
 Sawyer Gear & Mfg. Co., 5122 St. Clair Ave., Cleveland, O.
 Schnerr Co., J. J., 799 Golden Gate Ave., San Francisco, Cal. (See page 429.)
 Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.
 Sier-Bath Co., 143 W. 54th St., New York, N. Y. (See page 425.)
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Steel Forgings Co., Brotherton Rd., Cincinnati, O.
 Stork Motor Co., 1212 N. Niagara St., Saginaw, W. S. Mich.
 Syracuse Rawhide Mfg. Co., Holland Pl., Syracuse, N. Y.
 T. C. M. Mfg. Co., Hunterdon & First Sts., Harrison, N. J.
 Turley Gear & Machine Co., 1505-11 N. Tenth St., St. Louis, Mo.
 Turner Machine Co., 23 Maple Ave., Danbury, Conn.
 Universal Auto Parts Co., 208 Nartilla St., Portland, Ore. (Distributors.) (See page 157.)
 Union Gear & Machine Co., 27 Purchase St., Boston, Mass.
 Van Dorn & Dutton Co., 2978 Woodhill Rd., Cleveland, O.
 Wappat Gear Works, Mead St. & Braddock Ave., Pittsburgh, Pa.
 Warner Gear Co., Muncie, Ind. (See page 419.)
 Warren Gear Products Co., Warren, Pa.
 Weekes-Hoffman Co., Syracuse, N. Y. (See page 423.)
 Weinberg, Samuel, Scranton, Pa. (Distributor.) (See page 423.)
 Western Gear Works, Ninth Ave. S. & King St., Seattle, Wash.
 Worcester Gear Works, 33 N. Foster St., Worcester, Mass.

GEARS and PINIONS, Rawhide, Fibre and Fabric

- (Rawhide, Fibre and Fabric Gear cutting on contract to sample or blue print)
 Chicago Rawhide Mfg. Co., 1301 Einton Ave., Chicago, Ill.
 Crofoot Gear Works, Hyde Park Ave. at Readville, Boston, Mass. (See page 421.)
 Dalton & Balch, 2333 S. Michigan Ave., Chicago, Ill. "D. & B." (See page 999.)
 D. & B.—See Dalton & Balch.
 Diamond State Fibre Co., Bridgeport, Pa.
 Earle Gear & Machine Co., Stenton & Wyoming Aves., Philadelphia, Pa.

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GUARANTEED GEARS

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**Maxwell Chevrolet
and Ford**

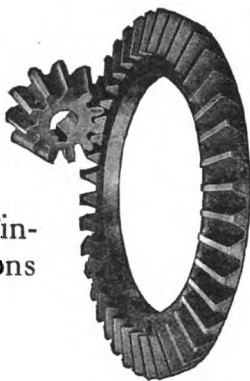
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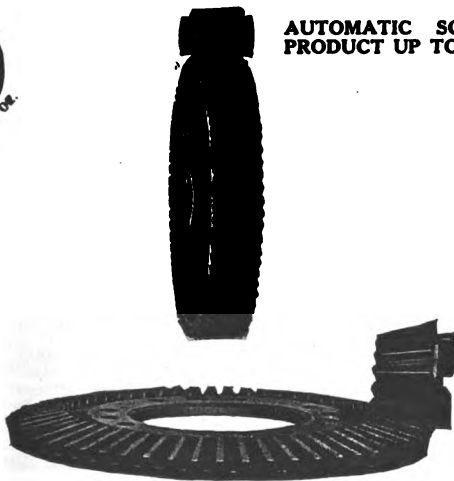
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GEARS and Pinions, Rawhide, Fibre and Fabrics (Continued)

Fabroll—See General Electric Co.
 Ganschow Co., Wm., 1001 W. Washington St., Chicago, Ill. (See page 429.)
 General Electric Co., Schenectady, N. Y. "Fabroll." (See page 697.)
 Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 423.)
 Michigan Gear & Engineering Co., 27 W. Woodbridge St., Detroit, Mich.
 Milwaukee Gear Co., 1222-24 Third St., Milwaukee, Wis.
 Nuttall Co. R. D., McCandless St. & Harrison Ave., Pittsburgh, Pa.
 Perfection Timing Gear Co., 1475 Michigan Ave., Chicago, Ill. (See page 420.)
 Philadelphia Gear Works, 1120 Vine St., Philadelphia, Pa.
 Schnerr Co. J. J., 799 Golden Gate Ave., San Francisco, Cal. (See page 429.)
 Swivel Joint & Shaft Co., Plymouth, Ind. (See page 761.)
 Syracuse Rawhide Mfg. Co., Holland Pl., Syracuse, N. Y.
 Van Dorn & Dutton Co., 2978 Woodhill Rd., Cleveland, O.

GEARS and PINIONS, Speedometer

(Metal and Fibre Speedometer Gears and Pinions)

Diamond State Fibre Co., Bridgeport, Pa.
 F. W. S.—See Stewart Mfg. Corp.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Ogden Mfg. Co., Plymouth, Ind.
 Saco—See Speedometer Accessories.
 Speedometer Accessories, Plymouth, Ind. "Saco."
 Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill. "F. W. S."

GENERATOR BRUSH SANDERS FOR FORDS—See Sanders, Generator Brush

GENERATOR BRUSHES—See Brushes, Magneto, Starter and Generator

GENERATOR COILS—See Windings, Starter and Ignition

GENERATOR COUPLINGS—See Couplings, Magneto and Generator.

GENERATOR HOLDING STANDS—See Stands, Generator Holding

GENERATOR TUBING—See Tubing, Soft Rubber; also Tubing, Brass and Copper

GENERATOR WINDINGS—See Windings, Starter and Ignition

GENERATORS, Acetylene Gas

(For use on car; for Generators for Welding—See Machines, Autogenous Welding; for Acetylene Tanks—See Tanks, Acetylene)

Brooks Machine Co., 225 W. Lewis St., Wichita, Kans.
 Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
 Hall Lamp Co., C. M., Detroit, Mich. "Solar."
 Neverout—See Rose Mfg. Co.
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."
 St. Paul Welding & Mfg. Co., 174 W. Third St., St. Paul, Minn. "Torit."

Solar—See Hall Lamp Co.

Torit—See St. Paul Welding & Mfg. Co.

Victor—See Corcoran-Victor Co.

GENERATORS, ACETYLENE GAS TRACTOR—See Generators, Tractor Acetylene

GENERATORS, Electric Lighting and Battery Charging

(See also Starters, Electric; also Systems, Electric Lighting)

American Bosch Magneto Corp., (Brightwood), Springfield, Mass. "Bosch."
 American Ever Ready Works, Long Island City, N. Y.
 Auto-Lite—See Electric Auto-Lite Corp.
 Auto-Spark—See Motsinger Device Mfg. Co.
 Bijur Motor Appliance Co., Hoboken, N. J. (See page 433.)
 Bosch—See American Bosch Magneto Corp.
 Dayton Engineering Laboratories Co., 329 E. First St., Dayton, O. "Delco."
 Delco—See Dayton Engineering Laboratories Co.
 Dyneto Electric Corp., Syracuse, N. Y.
 Electric Auto-Lite Corp., Toledo, O. "Auto-Lite."
 General Electric Co., Schenectady, N. Y. (See page 697.)
 Harris Electric Co., 255 California St., San Francisco, Cal. "Neuland."
 Hertner Electric & Mfg. Co., 1905 W. 113th St., Cleveland, O.
 Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.
 Huff—See Simms Magneto Co.
 Ita Manufacturers, Glen Ellyn, Ill.
 Kemco Electric Mfg. Co., Salem, Ohio.
 L-N—See Leece-Neville Co.
 Lauraine Magneto Co., Long Island City, N. Y.
 Leece-Neville Co., 5363 Hamilton Ave., Cleveland, O. "L-N."
 Leonard Electric Co., Ward, Mt. Vernon, N. Y.
 Motsinger Device Mfg. Co., 113 N. Noble St., Indianapolis, Ind. "Auto-Spark."
 Neuland—See Harris Electric Co.
 North East Electric Co., Rochester, N. Y.
 Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.
 Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J. "Huff."
 Verlux Co., Alliance, O.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)

GENERATORS, Electric Lighting and Battery Charging, for Fords

(See also Starters, Electric)

Detroit Starter Co., 612 E. Jefferson St., Detroit, Mich. "Genolite."
 Dyneto Electric Corp., Syracuse, N. Y.
 Genolite—See Detroit Starter Co.

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Rear Axles and Transmissions



Unexcelled Facilities
Best Grade Materials, Carefully Tested
Dependable Service—Reliable Quality

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Indianapolis, Ind.

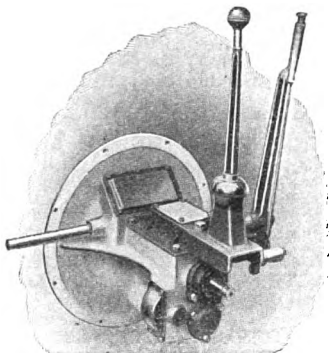
MUNCIE GEARS

Model T25 for Pleasure Cars
and Light Trucks

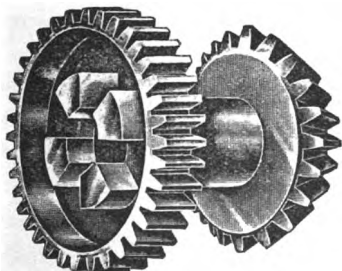
Speed Reduction:

1st	2.6 to 1
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Gears 6-8 Pitch.



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Heat Treating of Every Description

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GENERATORS, Electric Lighting and Battery Charging, for Fords (Continued)

Holtzer-Cabot Electric Co., 135 Armory St., Boston, Mass. "J-S."
 Ita Manufacturers, Glen Ellyn, Ill.
 J-S—See Holtzer-Cabot Electric Co.
 Kemco Electric Mfg. Co., Salem, Ohio.
 Lauraine Magneto Co., Long Island City, N. Y.
 Nicollite—See Quinn Co.
 Pellet Magneto Co., 25th St. & Wabash Ave., Chicago, Ill.
 Quinn Co., Nelson J., Toledo, O. "Nicollite."
 Superior Engineering Co., 332 Third Ave., Pittsburgh, Pa.
 Teco—See Titan Engineering Co.
 Titan Engineering Co., 603 W. Pearl St., Union City, Ind. "Teco."
 Wells Mfg. Co., R. C., 114 S. Brooke St., Fond du Lac, Wis.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 830 and 837.)

GENERATORS, ELECTRIC LIGHTING, TRACTOR—See Generators, Tractor Electric Lighting

GENERATORS, STEAM STORAGE BATTERY OPENINGS—See Steamers, Storage Battery

GENERATORS, Tractor Acetylene

Hall Lamp Co., C. M., Detroit, Mich. "Solar."
 Solar—See Hall Lamp Co.

GENERATORS, Tractor Electric Lighting

Air-Way Electric Appliance Corp., 618 Broadway, Toledo, O. "Arrow."
 Arrow—See Air-Way Electric Appliance Co.
 Dyneto Electric Corp., Syracuse, N. Y.
 Nicollite—See Arrow.
 North East Electric Co., Rochester, N. Y.
 Reagle Co., 1125 Oregon Ave., Cleveland, O.
 Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.
 Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

GERMAN SILVER—See Brass, Sheet

GIMPS, UPHOLSTERY—See Bindings, Upholstery

GLARE DIMMERS—See Dimmers, Glare

GLARE ELIMINATORS—See Dimmers, Glare

GLARE PREVENTERS—See Dimmers or Shades, Headlight

GLARE STOPPERS—See Dimmers, Glare

GLASS, BODY—See Glass, Polished Plate

GLASS CURTAIN WINDOWS—See Windows, Glass Curtain

GLASS CUTTERS—See Cutters, Circular Glass

GLASS FRONTS—See Shields, Wind

GLASS, Polished Plate and Flat Drawn

(For windshields and closed body work; also for lamp, clock, gage and meter glasses)

American Glass & Beveling Co., Clark & Harriett Sts., Cincinnati, O.
 American Window Glass Co., Farmers Bank Bldg., Pittsburgh, Pa. (See page 427.)
 Automobile Glass Co., First St., bet. Congress & Fort Sts. W., Detroit, Mich.
 Bache & Co., Semon, West & Hubert Sts., New York, N. Y.
 Brigatocke, M. K., 1027-29 Park St., Peekskill, N. Y.
 Chesler & Son Co., J., 147 Gratton St., Brooklyn, N. Y.
 Eureka—See Glass Foundries Corp.
 Glass Foundries Corp., Washington Ave. & P. R. R., Milltown, N. J. "Eureka."
 Harris, Chas. H., 142-46 W. 24th St., New York, N. Y.
 Hires-Turner Glass Co., 30th & Walnut Sts., Philadelphia, Pa. "Lighthouse."
 House Convex Glass Co., L. J., Drawer E., Point Marion, Pa. (See page 427.)
 Lighthouse—See Hires-Turner Glass Co.
 Northwestern Mirror & Specialty Co., 1225-29 S. Crawford Ave., Chicago, Ill.
 Nurra Mirror Plate Co., Bloomington, Ind.
 Peaslee-Gaulbert Co., Louisville, Ky. (See page 613.)
 Perfection Co., 400 W. Ohio St., Chicago, Ill.
 Rawle Co., M., 525-35 W. 54th St., New York, N. Y.
 Royal Glass Works, 120-26 Wooster St., New York, N. Y.
 Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.
 Schoonover Glass Co., W. J., 801 Wyoming Ave., Scranton, Pa.
 Smith, Thos. J. D., 63-71 Chambers St., New York, N. Y.
 Standard Glass Co., 1766 Mt. Elliott Ave., Detroit, Mich.
 Thoma & Son, Fairfield, Iowa. "Thomaplate."
 Thomaplate—See Thoma & Son.
 Tyler & Hippach, 366-400 W. Ohio St., Chicago, Ill.
 Waxman & Co., A., 430 N. Third St., Philadelphia, Pa.
 Widman & Co., J. C., 1143 14th Ave., Detroit, Mich.

GLASS, WINDSHIELD—See Glass, Polished Plate

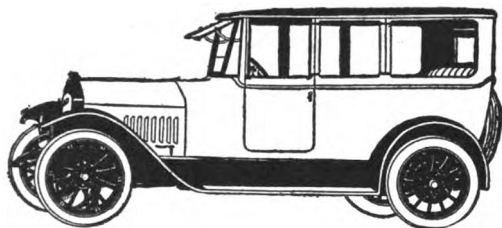
GLASS WINDSHIELD CLEANERS—See Cleaners, Wind Shield; also Compounds, Glass Wind Shield

GLASS WINDSHIELD WINGS—See Shields, Auxiliary Windshield

GLASS, WINDOW—See Glass, Polished Plate

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FLAT GLASS



Crystal Sheet Glass

¶ The most practical flat glass for closed cars or body fittings. It is lower priced than plate glass and is just as serviceable.

¶ It can be furnished in thicknesses not exceeding $\frac{3}{8}$ ".

¶ By Government Test $\frac{3}{8}$ " Crystal Sheet Glass is stronger than $\frac{1}{4}$ " polished plate.

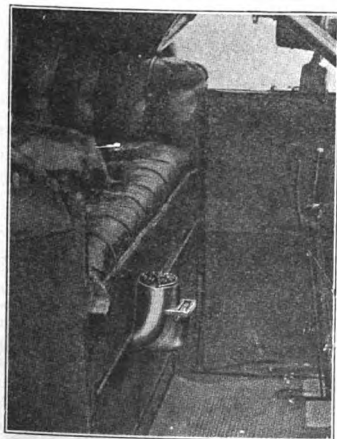
¶ We make thin glass for

Headlights
Clock Faces

Speedometers
Oil Gauges

AMERICAN WINDOW GLASS COMPANY

General Offices: FARMERS' BANK BLDG. PITTSBURGH, PA., U. S. A.



The GOITE FILLOMETER

Combined gas filler and gauge
for all Ford models. Write to

Goite Manufacturing Company
Kokomo, Indiana

FOR AUTO SIDE WINGS, VISORS, CURTAIN GLASS

Use Our

36 oz. and 3/16"

TRANSPARENT COLORED POT SHEET GLASS

Glass You See Thru

Non-Glare

Both Sides Smooth

Cut to Size and Shape—Not Expensive
Furnished with Ground, Polished, Round
or Beveled Edge

READY TO PUT IN FRAME

Assorted Colors

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SAMPLES ON REQUEST

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L. J. HOUZE CONVEX GLASS CO.

Colored Glass Specialists

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Western Office: 728 W. Madison St., Chicago

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GLASSES, Lamp*(For Dimming or Deflecting lamp glasses—See Dimmers, Headlight)*

Amesbury Bent Glass Co., Amesbury, Mass.
 House Convex Glass Co., L. J., Drawer E,
 Point Marion, Pa. (See page 427.)
 Insel Co., 250 South St., Newark, N. J.
 "Inselite."
 Inselite—See Insel Co.
 Jefferson Glass Co., State St., Follansbee, W.
 Va.
 Johnston Glass Co., Hartford City, Ind.
 Lancaster Lens Co., 220-24 W. Main St., Lan-
 caster, O.
 Specialty Glass Co., Huntington, W. Va.
 Standard Glass Specialty Co., Morgantown,
 W. Va.

GLASSES, Lubricator*(Glass cylinders and tubes for lubricators and sight feeds)*

Bache & Co., Semon, West & Hubert Sts.,
 New York, N. Y.
 Doerco—See Doerr Glass Co.
 Doerr Glass Co., Peach St. & Blvd., Vineland,
 N. J. "Doerco."
 Moncrieff—See Rogers Co.
 Rogers Co., H. A., 27 Walker St., New York,
 N. Y. "Moncrieff." (Importers.)

GLOVES and GAUNTLETS, Motor-ists'

Allen Glove Co., 15 Forrest St., Gloversville,
 N. Y.
 American Glove Co., 2025 Churchill St., Chi-
 cago, Ill.
 Bi-Plane—See Morrison-Ricker Mfg. Co.
 Bishop Co., J. H., Wyandotte, Mich.
 Black Ghost—See Heagle, James.
 Boss Mfg. Co., 70 Washington St., Brooklyn,
 N. Y. "Wallopier."
 Brad—See Bradford, R. E.
 Bradford, R. E., & Burr St., Gloversville, N. Y.
 "Brad."
 Crosby-Frisian Fur Co., 571 Lyell Ave., Roch-
 ester, N. Y.
 Elsenrath Glove Co., 3001 Elston Ave., Chi-
 cago, Ill.
 Ellsworth & Thayer Mfg. Co., 228-40 Broad-
 way, Milwaukee, Wis. "Great Western."
 Fried, Ostermann Co., 617-45 Reed St., Mil-
 waukee, Wis. "Price."
 Gloversville Auto-Glove Co., 69-73 W. Fulton
 St., Gloversville, N. Y. "M. W. M."
 Great Western—See Ellsworth & Thayer Mfg.
 Co.
 Grinnell—See Morrison-Ricker Mfg. Co.
 Grip-Tite—See Morrison-Ricker Mfg. Co.
 Hansen Mfg. Co., O. C., 517 Wright St., Mil-
 waukee, Wis.
 Heagle, James, First Ave. & Market St.,
 Johnstown, N. Y. "Black Ghost."
 Limp-Kuff—See Morrison-Ricker Mfg. Co.
 Luther Glove Co., J. P., Berlin, Wis. "Red
 Ball."
 M. W. M.—See Gloversville Auto-Glove Co.
 Michigan Motor Garment Co., Greenville,
 Mich. "Never-Rip."
 Morawetz Co., 217-25 E. Water St., Milwaukee,
 Wis.
 Morrison-Ricker Mfg. Co., 72 Broad St., Grin-
 nell, Ia. "Grinnell," "Rist-Fit," "Grip-Tite,"
 "Limp-Kuff," "Bi-Plane."
 Never-Rip—See Michigan Motor Garment Co.
 Ohio Bluff & Mfg. Co., 1924-26 W. Eighth St.,
 Cincinnati, O.

Pontiac Knitting Co., Pontiac, Mich.
 Price—See Fried, Ostermann Co.
 Red Ball—See Luther Glove Co.
 Ripon Knitting Works, Ripon, Wis.
 Rist-Fit—See Morrison-Ricker Mfg. Co.
 Save-A-Sleeve—See U. S. Glove Co.
 Segco—See Syracuse-Eldridge Co.
 Shayne & Co., C. C., 126 W. 42d St., New York,
 N. Y.
 Stifel & Sons, J. L., Wheeling, W. Va.
 Syracuse-Eldridge Co., 1108 Spring St., Syra-
 cuse, N. Y. "Segco."
 U. S. Glove Co., Marion, Ind. "Save-A-
 Sleeve."
 Walloper—See Boss Mfg. Co.
 Walrath Glove Co., Gloversville, N. Y.

GLOVES, Rubber*(Cold Proof Gloves for storage battery workers)*

Aetna Rubber Co., 815 E. 79th St., Cleveland,
 Ohio.
 Faultless Rubber Co., Ashland, O.
 Wilson Rubber Co., 1216 Garfield Ave., Can-
 ton, O.

GLUE HEATERS—See Heaters, Glue**GLUE, LINOLEUM—See Cement, Linoleum****GOGGLES, Mechanics and Welders**

Adams, William C., 222 Boylston St., Boston,
 Mass.
 American Thermo-Ware Co., 16 Warren St.,
 New York, N. Y.
 American Welding Co., 2301 Olive St., St.
 Louis, Mo.
 Chicago Eye Shield Co., 2309 Warren Ave.,
 Chicago, Ill. "Fyber-Weld," "Kraftguard."
 Cover, H. S., Chippewa Ave., South Bend, Ind.
 Fyber-Weld—See Chicago Eye Shield Co.
 Kraftguard—See Chicago Eye Shield Co.
 Merry Optical Co., 1009 Walnut St., Kansas
 City, Mo.
 National Founders Association, 29 S. LaSalle
 St., Chicago, Ill.
 Resistal Industrielle—See Strauss & Buegel-
 eisen.
 Strauss & Buegeleisen, 16 Hanover Pl.,
 Brooklyn, N. Y. "Welda," "Resistal Indus-
 trielle."
 Strong, Kennard & Nutt Co., 2044 E. Ninth
 St., Cleveland, O.
 Welda—See Strauss & Buegeleisen.
 Willson Goggles, Inc., Second & Washington
 Sts., Reading, Pa.

GOGGLES and EYE SHIELDS, Motorists

A-Justo—See Aske Moore Corp.
 Adams, William C., 222 Boylston St., Boston,
 Mass.
 Albex—See Willson & Co.
 Allwon—See Strauss & Buegeleisen.
 American Optical Co., Southbridge, Mass.
 "Sedan," "Biplane."
 American Spectacle Co., 47 W. 24th St., New
 York, N. Y.
 American Thermo-Ware Co., 16 Warren St.,
 New York, N. Y. "Autocrat."
 Anito—See New Era Optical Co.
 Aske Moore Corp., 19 Lake Ave. N., Duluth,
 Minn. "A-Justo."

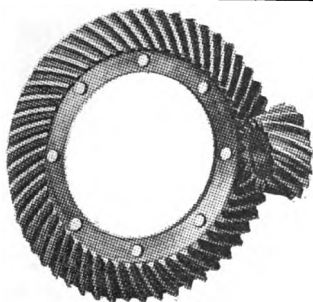
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GOGGLES and EYE SHIELDS, Motorists' (Continued)

Autocrat—See American Thermo-Ware Co.
 Autoglass—See Hardy & Co.
 Biplane—See American Optical Co.
 Cesco—See Chicago Eye Shield Co.
 Chicago Eye Shield Co., 2300 Warren Ave., Chicago, Ill. "Cesco," "Nonstrain."
 De Luxe—See Griffin, G. A.
 Dim-A-Glare—See Hainert & Son.
 Dimmer Goggle Co., Whiting, Ind.
 Eff & See—See Frank & Co.
 Eyetects—See Strauss & Buegeleisen.
 Frank & Co., Arthur, 71-73 Nassau St., New York, N. Y. "Eff and See."
 George—See Hainert & Son.
 Griffin, G. A., 110 E. 23d St., New York, N. Y. "De Luxe."
 Haco—See Hudson Products Co.
 Hainert & Son, F. H., 3043 Nicollet Ave., Minneapolis, Minn. "George," "Dim-A-Glare."
 Hardy & Co., F. F., 10 S. Wabash Ave., Chicago, Ill. "Autoglass."
 Hudson Products Co., 44 E. 23d St., New York, N. Y. "Haco."
 Jay & Dee Specialty Co., 41 Park Row, New York, N. Y.
 Johnston Co., Geo. S., 4104 E. Ravenswood Ave., Chicago, Ill.
 Keystone—See Willson & Co.
 King Optical Co., F. W., Euclid Arcade Bldg., Cleveland, O.
 Kirstein Sons Co., E., 243 Andrews St., Rochester, N. Y. "Shur-On."
 Mucalite—See Strauss & Buegeleisen.
 New Era Optical Co., 123 W. Madison St., Chicago, Ill. "Anito."
 Nonstrain—See Chicago Eye Shield Co.
 Nosquint—See Strauss & Buegeleisen.
 Nuform—See Strauss & Buegeleisen.
 Optical Specialties Co., 132 Church St., New York, N. Y. "Snuggit."
 Pennsylvania Optical Co., 125 S. Fifth St., Reading, Pa.
 Resistal—See Strauss & Buegeleisen.
 Sedan—See American Optical Co.
 Segco—See Syracuse & Eldridge Glove & Luggage Co.
 Shur On—See Kirstein Sons Co.
 Siesel-Spill Mfg. Co., 19 Madison Ave., New York, N. Y. "Turtle."
 Snuggit—See Optical Specialties Co.
 Standard Optical Co., Geneva, N. Y. "Stocco."
 Stocco—See Standard Optical Co.
 Strauss & Buegeleisen, 16 Hanover Pl., Brooklyn, N. Y. "Allwon," "Eyetects," "Resistal," "Nosquint," "Nuform," "Flexi-shield," "Xyloshell."
 Syracuse & Eldridge Glove & Luggage Co., 1108 Spring St., Syracuse, N. Y. "Segco."
 Turtle—See Siesel-Spill Mfg. Co.
 Willson Goggles, Inc., Second & Washington Sts., Reading, Pa. "Albex," "Zylbex," "Keystone."
 Xyloshell—See Strauss & Buegeleisen.
 Yatman Rubber Co., 267-69 Mt. Pleasant Ave., Newark, N. J.
 Zylbex—See Willson & Co.

GOGGLES, WELDERS—See Goggles, Mechanics

GONGS, MECHANICAL—See Bells, Mechanical

GOVERNORS, Clutch

Pierce Governor Co., Anderson, Ind.
 (See page 431.)

GOVERNORS, Engine

(For keeping the speed of a car below predetermined limits)

American Governor & Mfg. Co., Anderson, Ind.
 Berden Mfg. Co., 2178 E. Grand Blvd., Detroit, Mich.
 Dell & Co., Majestic Bldg., Detroit, Mich.
 Duplex Engine Governor Co., 58 Flatbush Ave. Ext., Brooklyn, N. Y. "Simplex."
 Evans—See Hoffercker Co.
 Hoffercker Co., Motor Mart Bldg., Boston, Mass. "Evans."
 International Devices Co., 326 Broadway, New York, N. Y.
 K. P. Products Co., 250 W. 54th St., New York, N. Y.
 Krebs-Wells Controller Co., Clyde, O. "W-K."
 Kurtz & Son, S. E., Sac City, Ia.
 Monarch Governor Co., 1832-34 W. Bethune Ave., Detroit, Mich.
 Pharo Mfg. Co., Bethlehem, Pa.
 Pierce Governor Co., Anderson, Ind.
 (See page 431.)
 S-W-S Co., Minneapolis, Minn.
 (See page 431.)
 Simplex—See Duplex Engine Governor Co.
 Standard Governor Co., Rockford, Ill.
 W-K—See Krebs-Wells Controller Co.

GOVERNORS, Engine, for Fords

(For keeping the speed of the car below predetermined limits)

Autoware Corp., 441 State St., Detroit, Mich. "Kant-Speed."
 Berden Mfg. Co., 2178 E. Grand Blvd., Detroit, Mich.
 Cyclone—See Holland Brass Works.
 Dell & Co., Majestic Bldg., Detroit, Mich.
 Duplex Engine Governor Co., 58 Flatbush Ave. Ext., Brooklyn, N. Y. "Simplex."
 Holland Brass Works, 1110 S. Michigan Ave., Chicago, Ill. "Cyclone."
 Kant-Speed—See Autoware Corp.
 M. B. S. Mfg. Co., 117 Sixth Ave., Clinton, Ia.
 Monarch Governor Co., 1832-34 W. Bethune Ave., Detroit, Mich.
 Paramount Mfg. Co., Paramount Bldg., Lancaster, Pa.
 Pierce Governor Co., Anderson, Ind.
 (See page 431.)
 Simplex—See Duplex Engine Governor Co.
 Standard Governor Co., Rockford, Ill.
 Wisconsin Mechanical Products Co., Fond du Lac, Wis.

GOVERNORS, ENGINE TRACTOR—See Governors, Tractor Engine

GOVERNORS, LOAD—See Meters, Truck-Load Indicating

GOVERNORS, Tractor Engine

American Governor & Mfg. Co., Anderson, Ind.
 Berden Mfg. Co., 2178 E. Grand Blvd., Detroit, Mich.
 Dobson—See Northwest Mfg. Co.
 International Devices Co., 326 Broadway, New York, N. Y.
 K. P. Products Co., 250 W. 54th St., New York, N. Y.
 Kokomo Brass Works, 1415 Webster St., Kokomo, Ind.

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The SENTRY Governor

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No disturbance of Timer—No drilling of holes—More sensitive in action
Easy to install—Lower in Price

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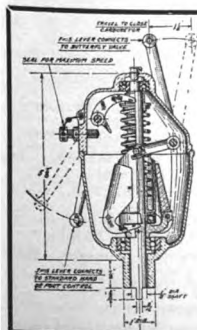
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and cone ball
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GOVERNORS, Tractor Engine (Continued)

Monarch Governor Co., 1832-34 W. Bethune Ave., Detroit, Mich.
 Northwest Mfg. Co., 228-30 N. Fifth St., Minneapolis, Minn. "Dobson."
 Pickering Governor Co., Pickering St., Portland, Conn.
 Pierce Governor Co., Anderson, Ind. (See page 431.)
 S-W-S Co., Minneapolis, Minn. (See page 431.)
 Sentry—See Special Appliance Corp.
 Special Appliance Corp., 306 W. Oak St., Chicago, Ill. "Sentry." (See page 431.)
 Standard Governor Co., Rockford, Ill.
 Superior—See Tractor Appliance Co.
 Taco—See Tractor Appliance Co.
 Tractor Appliance Co., Shelbyville, Ill. "Superior."
 Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Taco."
 Wehr Co., 533 30th St., Milwaukee, Wis. (See page 505.)
 Yost Auto Co., Sutton, Neb.

GRAPHITE CYLINDER CUPS—See Lubricators, Cup Cylinder

GRAPHITE CYLINDER LUBRICATORS—See Lubricators, Cup Cylinder

GRAPHITE, Lubricating

(For Graphite Grease—See Greases, Cup and Gears)

Acheson Products—See Cassidy Co.
 Cassidy Co., Inc., Edward A., 23 W. 43d St., New York, N. Y. (Sales Dept. for Acheson Products, Niagara Falls, N. Y.)
 Chester Graphite Co., Chester Springs, Pa.
 Dixon Crucible Co., Joseph, Jersey City, N. J.
 Liberty Chemical Works, Chicago, Ill. (See page 783.)
 Motorflake—See Superior Flake Graphite Co.
 Oilzum—See White & Bagley Co.
 Superior Flake Graphite Co., 76 W. Monroe St., Chicago, Ill. "Motorflake." (See page 433.)
 United States Graphite Co., Saginaw, Mich.
 White & Bagley Co., Worcester, Mass. "Oilzum." (See page 607.)

GRAVITY GAGES, SPECIFIC—See Gages, Specific Gravity

GRAY IRON CASTINGS—See Castings, Gray Iron

GREASE BAGS—See Boots, Steering Knuckle

GREASE CUP WRENCHES—See Wrenches, Grease Cup

GREASE CUPS—See Cups, Oil and Grease

GREASE GUN LOADERS—See Loaders, Grease Gun

GREASE GUNS—See Guns, Grease; also Guns, Portable Garage Grease; also Systems, Chassis Lubricating

GREASE RETAINERS FOR FORDS—See Retainers, Rear Axle Grease

GREASES, Cup and Gear

Acheson Products—See Cassidy Co.
 Advance—See Lynch, Alonzo K.
 Advance Grease Co., Jackson, Mich.
 Albany—See Cook's Sons.
 Alexander & Co., H. T., 17 Battery Pl., New York, N. Y. "Grand Prix."
 Allegheny—See Roseberg Oil Co.
 Amalie—See Sonneborn Sons.
 American Oil Co., American Bldg., Baltimore, Md. "Eze-Lube," "Amoco."
 American Oil Corp., S. Water St., Jackson, Mich.
 Amoco—See American Oil Co.
 Anti-Friction Lubricant Co., E. Broad St., St. Joseph, Mich.
 Armour Oil & Chemical Co., Reserve Bank Bldg., Kansas City, Mo.
 Asbury Graphite Mills, Asbury, N. J.
 Atlas—See Swan & Finch Co.
 Aurora—See Pigot-Sayre Co.
 Auto Oil Co., 172 S. Water St., Jackson, Mich.
 Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats-All." (See page 343.)
 Badger—See Wadhams Oil Co.
 Balcylene—See Balso Oil Co.
 Balkan—See Jones & Bro.
 Balso Oil Co., 238 N. Erie St., Toledo, O. "Balcylene."
 Banner—See Clarkson & Ford Co.
 Baum's Castorine Co., 104 N. George St., Rome, N. Y.
 Bayerson Oil Works, E. 12th St. & P. R. R., Erie, Pa. "Ebonite."
 Beats-All—See Auto Specialties Mfg. Co.
 Berry's Sons, Jas. L., 11 Broadway, New York, N. Y.
 Bison—See Swan & Finch Co.
 Black Devil—See Frazer Lubricator Co.
 Black Diamond—See Sweet, Charles F.
 Bliven & Carrington, 29 Moore St., New York, N. Y. "E. Z. Way," "Spermolene."
 Borne, Scrymser Co., 80 South St., New York, N. Y. "Colonial," "Silex," "Puritan."
 Bull Dog—See Climax Western Oil Co.
 Butler-Harley Co., 33rd & Master Sts., Philadelphia, Pa. "Harco."
 Calypso—See Swan & Finch Co.
 Camden Chemical Mfg. Co., 18th & Mickle Sts., Camden, N. J. "Greyhound."
 Cascade—See Swan & Finch Co.
 Casco Bar-Metallic Packing Co., 8 S. Dearborn St., Chicago, Ill.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Dept. for Acheson Products, Niagara Falls, N. Y.) "Gredag."
 Chester Graphite Co., Chester Springs, Pa. "Hexagon."
 Chainolene Mfg. Co., 564 W. Randolph St., Chicago, Ill. "Purolene."
 Clarkson & Ford Co., 56 Water St., New York, N. Y. "Banner."
 Climax—See Sweet, Charles F.
 Climax Western Oil Co., 2824 Tenth Ave., S., Minneapolis, Minn. "Bull Dog."
 Colonial—See Borne, Scrymser Co.
 Columbia Refining Co., 90 West St., New York, N. Y. "K. A. C.," "Royal."
 Connecticut Oil Co., 549 S. Leonard St., Waterbury, Conn.
 Cook's Sons, Adam, 708-10 Washington St., New York, N. Y. "Albany," "Alpha."
 Crane & Co., 91 Oliver St., Boston, Mass. "Eureka."
 Cupese—See Swan & Finch Co.
 Cupolene—See Tide Water Oil Co.
 Currola—See Curry Bros. Oil Co.

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A selected grade of Superflake Graphite especially prepared and ground to an impalpable fineness, used on Automobiles, Motor Boats, Motor Cycles and all automotive equipment.



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The Bijur Motor Appliance Company specializes in the design and manufacture of starting and lighting equipment. A ten-story plant located in Hoboken, N. J., is devoted entirely to the manufacture of electrical equipment and supply parts for passenger cars, trucks, seaplanes, airplanes, blimps, and other automotive machines.

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There are large profits to be made in reboring cylinders if you have the best tool for the work.

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TRADE MARK—REGISTERED U.S. PAT. OFF.
OILS
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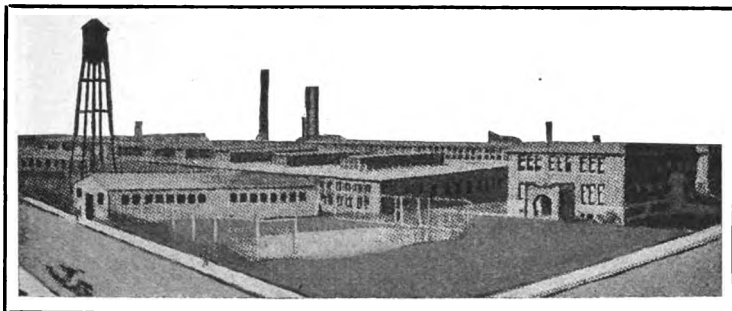
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GREASES, Cup and Gear (Continued)

- Curry Bros. Oil Co., 252-55 Franklin St., Boston, Mass. "Currola," "Superba," "Unity."
- D-A Lubricant Co., W. 29th & Canal Sts., Indianapolis, Ind.
- Damascus Mfg. Co., 9501 Cassius Ave., Cleveland, O.
- Dearborn Chemical Co., 232 S. Michigan Ave., Chicago, Ill.
- Detroit—See Zurn Co.
- Dixon Crucible Co., Joseph, Jersey City, N. J.
- Duffy Oil & Grease Co., 505 W. 45th St., New York, N. Y.
- Duplex—See Enterprise Oil Co.
- Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
- Duro-Mum—See Great Western Oil Co.
- Dutch—See Van Cleef Bros.
- E. Z. Way—See Bliven & Carrington.
- Eagle Oil & Supply Co., 45 India St., Boston, Mass. "Eagleline."
- Eagleline—See Eagle Oil & Supply Co.
- Ebonite—See Bayerson Oil Works.
- Economy—See Pennsylvania Lubricating Co.
- Emco—See Emery Mfg. Co.
- Emery Mfg. Co., 43 Main St., Bradford, Pa. "Emco."
- Emlenton Refining Co., Emlenton, Pa.
- Empire—See Richardson Lubricating Co.
- En-ar-co—See National Refining Co.
- Ensign Refining Co., 10703 Quebec Ave., Cleveland, O.
- Enterprise Oil Co., 164 Chandler St., Buffalo, N. Y. "Duplex."
- Eureka—See Crane & Co.
- Excelsior—See Kellogg & Co.
- Excelsior—See Mills Oil Co.
- Eze-Lube—See American Oil Co.
- Famous Sales Co., 4234 S. Wabash Ave., Chicago, Ill. "Gear-Life."
- Faultless—See Hawkeye Oil Co.
- Ferrol—See Fiske Bros. Refining Co.
- Fiske Bros. Refining Co., 24 State St., New York, N. Y. "Ferrol."
- Frank Oil Co., 23 W. Spring St., Titusville, Pa.
- Fraser Lubricator Co., 3921 Normal Ave., Chicago, Ill. "Black Devil."
- G. M. C.—See Gearo Mfg. Co.
- Gearsease—See Swan & Finch Co.
- Gear-Life—See Famous Sales Co.
- Gearo Mfg. Co., Vine & Olive Sts., Quincy, Ill. "G. M. C."
- Gere-Lub—See Kentucky Consumers Oil Co.
- Gold Medal—See Monarch Mfg. Co.
- Gold Medal—See Stevenson Bro. & Co.
- Golden—See Great Western Oil Co.
- Grafene—See United States Graphite Co.
- Grand Prix—See Alexander & Co.
- Great Western Oil Co., 2355 E. 37th St., Cleveland, O. "Superior," "Golden," "Duro-Mum."
- Gredag—See Cassidy Co.
- Green Seal—See Monarch Mfg. Co.
- Green Seal—See Phoenix Oil Co.
- Greoli—See Robinson & Son Co.
- Greyhound—See Camden Chemical Mfg. Co.
- Gulf Refining Co., Pittsburgh, Pa. "Supreme."
- Haggerty Refining Co., 50 South St., New York, N. Y. "Thermo."
- Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 655.)
- Harco—See Butler-Harley Co.
- Harris Oil Co., A. W., Providence, R. I. (See page 433.)
- Harrison, Jr. Co., John, 21st & Race Sts., Philadelphia, Pa.
- Havoline—See Indian Refining Co.
- Hawkeye Oil Co., Miles & Roosevelt Sts., Waterloo, Ia. "Faultless."
- Hercules—See Media Grease Co.
- Hexagon—See Chester Graphite Co.
- Hobson Oil Co., 1974 Broadway, New York, N. Y. "Knightol."
- Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whis."
- Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa.
- Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
- I. X. L.—See Kramer Co.
- Ideal—See Sheppard, W. S.
- Ideal—See Street & Co.
- Indian Refining Co., 244 Madison Ave., New York, N. Y. "Havoline."
- Ironsides Co., Hartman Bldg., Columbus, O.
- Jones & Bro., J., 429 Locust St., Philadelphia, Pa. "Balkan."
- K. A. C.—See Columbia Refining Co.
- Kellogg & Co., E. H., 243-44 South St., New York, N. Y. "Excelsior."
- Kellom & Co., Chas. F., 21st & Race Sts., Philadelphia, Pa.
- Kelly Graphite Mills, 351 W. 26th St., New York, N. Y.
- Kenco—See Kendall Refining Co.
- Kendall Refining Co., Bradford, Pa. "Kenco." "Kenco."
- Kentucky Consumers Oil Co., 37th & Bank Sts., Louisville, Ky. "Gere-Lub."
- Keystone Lubricating Co., 21st & Clearfield Sts., Philadelphia, Pa.
- Keystone Oil & Mfg. Co., 111 N. Market St., Chicago, Ill.
- Knightol—See Hobson Oil Co.
- Kramer Co., W. J., 214-16 Read St., Milwaukee, Wis. "I. X. L."
- La-Lo Chemical Co., Hay & Friendship Sts., Providence, R. I.
- Layton Park Oil & Soap Co., M. & M. Bank Bldg., Milwaukee, Wis.
- Liberty Bell Oil Co., 600 S. Vandeventer Ave., St. Louis, Mo.
- Liberty Chemical Works, Chicago, Ill. (See page 783.)
- Lindsay, McMillan Co., 342 Broadway, Milwaukee, Wis. "Mac-Lin's."
- Loos & Dilworth, 134 S. Front St., Philadelphia, Pa. "Pioneer."
- Lubriko Co., Meadow & Jackson Sts., Philadelphia, Pa.
- Lynch, Alonzo K., 310-12 Flushing Ave., Brooklyn, N. Y. "Advance."
- McLean-Jones Oil & Supply Co., 40 Court St., Boston, Mass. "Swatiska."
- Mac-Lin's—See Lindsay, McMillan Co.
- Magie Bros., 110-12 S. Clinton St., Chicago, Ill.
- Magnolia Petroleum Co., Akard & Main Sts., Dallas, Tex. "Magolene."
- Magolene—See Magnolia Petroleum Co.
- Manhattan Oil Co., 592 Vandalia St., St. Paul, Minn. "New Process."
- Marathon—See Transcontinental Oil Co.
- Marshall Oil Co., Marshalltown, Ia. "Moco." "Rex."
- Master—See Pure Oil Co.
- Media Grease Co., Media, Pa. "Hercules."
- Middle States Oil Co., Engineers Bldg., Cleveland, O.
- Millers Sons Co., A. D., Columbus & Preble Aves., Pittsburgh, Pa. "Perfection."
- Mills Oil Co., C. E., So. West St., Syracuse, N. Y. "Excelsior."
- Milwaukee Lubricants Co., 224 Broadway, Milwaukee, Wis.

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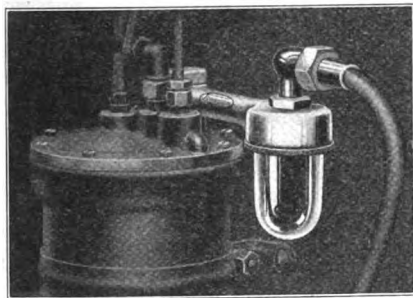
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- Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
 Moulubricant—See Vacuum Oil Co.
 Moco—See Marshall Oil Co.
 Monamobile—See Monarch Mfg. Co.
 Monarch Mfg. Co., 11th Ave. & Sixth St., Council Bluffs, Ia. "Gold Medal," "Green Seal," "Monamobile."
 Monogram—See New York Lubricating Oil Co.
 Motorlube—See Tygert Co.
 Motor Mica Products Co., 558 Washington Blvd., Chicago, Ill. "Twentieth Century."
 Mutual Oil Co., Inter-State Bldg., Kansas City, Mo.
 National Oil & Supply Co., 180 Freylinghuysen Ave., Newark, N. J. "Viscos."
 Navarre Oil Co., 3800 Nevada Ave., Cleveland, O.
 National Refining Co., National Building, Cleveland, O. "En-ar-co."
 New Process—See Manhattan Oil Co.
 New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
 New York & New Jersey Lubricant Co., 401 Broadway, New York, N. Y. "Non-Fluid."
 Nobetr—See Sawyer Oil Co.
 Non-Fluid—See New York & New Jersey Lubricant Co.
 Nusco—See Sun Co.
 Ohio Grease Co., Box 21, Loudonville, O. (See page 269.)
 Ohio Refining Co., Laidlaw Co., Cincinnati, O. "Pep."
 Oil City Oil & Grease Co., Seneca St., Oil City, Pa.
 Oil & Grease Co. of America, 414 Flushing Ave., Brooklyn, N. Y.
 Oilzum—See White & Bagley Co.
 O'Neill Oil & Paint Co., 397-303 E. Water St., Milwaukee, Wis. "Velvet."
 Ottomo—See Pioneer Mfg. Co.
 Palubco—See Pennsylvania Lubricating Co.
 Panama Lubricants Co., 2624 Santa Fe Ave., Los Angeles, Cal.
 Panhard Oil Corp., 395 Broadway, New York, N. Y.
 Paragon Refining Co., 2985 Front St., Toledo, O. "Polar."
 Paramount—See Schibling, Frederick.
 Parker Refining Co., 1807 W. 11th St., Cleveland, O.
 Patterson Lubricating Co., 114 Broad St., Boston, Mass.
 Penn—See Pennsylvania Lubricating Co.
 Penn Petroleum & Supply Co., 1224-30 Washington Ave., Philadelphia, Pa. "Primus."
 Pennsylvania Lubricating Co., 34th St. & A. V. Ry., Pittsburgh, Pa. "Penn," "Sylvan," "Economy," "Palubco."
 Pep—See Ohio Refining Co.
 Perfection—See Wood Co.
 Perfection—See Millers Sons Co.
 Perry Oil Co., 373 Central Ave., Pawtucket, R. I.
 Petroleum Products Co., 39th St. & B. & O. R. R., Pittsburgh, Pa. "Sound-Proof."
 Philadelphia Grease Mfg. Co., 848-50 S. Swanson St., Philadelphia, Pa.
 Phinney Bros. Co., Chambers Bldg., Oil City, Pa. "Quaker State."
 Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Green Seal."
 Pigot-Sayre Co., 17 Battery Pl., New York, N. Y. "Aurora."
 Pioneer—See Loos & Dilworth.
 Pioneer Mfg. Co., 10309 Harvard Ave., Cleveland, O. "Ottomo."
 Polar—See Paragon Refining Co.
 Polarine—See Standard Oil Co. of N. Y.
- Primus—See Penn Petroleum & Supply Co.
 Pure Oil Co., 1306 First St. S., Minneapolis, Minn. "Puritan," "Master."
 Puritan—See Pure Oil Co.
 Puritan—See Borne, Scrymser Co.
 Puritan Oil & Paint Co., 1218 W. 70th St., Cleveland, O.
 Purolene—See Chainolene Mfg. Co.
 Pyramid Oil Co., 2424 University Ave., Minneapolis, Minn.
 Quaker State—See Phinney Bros. Co.
 Red "C" Oil Mfg. Co., Keyser Bldg., Baltimore, Md. "Speedway."
 Redline—See Union Oil Co. of California.
 Rex—See Marshall Oil Co.
 Richardson Lubricating Co., Front & Maine Sts., Quincy, Ill. "Empire."
 Rie-Nie—See Durkee-Alwood Co.
 Robinson & Son Co., Wm. C., 32 South St., Baltimore, Md. "Greoli."
 Rome—See Howard Lubricants Co.
 Roseberg Oil Co., 923 Santa Fe Ave., Los Angeles, Cal. "Allogheny."
 Royal Petroleum Co., 204 E. 74th St., New York, N. Y.
 Royal—See Columbia Refining Co.
 Sawyer Oil Co., Howard B., 62 Long Wharf, Boston, Mass. "Nobetr."
 Schibling, Frederick, 617 Greenwich St., New York, N. Y. "Paramount."
 Shamrock—See Sinclair Refining Co.
 Shappell Petroleum Products Co., N. West St. Rd., Lima, O.
 Sheppard W. S., 21 Lawrence St., Newark, N. J. "Ideal."
 Sillex—See Borne, Scrymser Co.
 Sinclair Refining Co., 111 W. Washington St., Chicago, Ill. "Shamrock."
 Snow Flake Axle Grease Co., 123 Oliver St., Fitchburg, Mass.
 Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."
 Sound-Proof—See Petroleum Products Co.
 Speare's Sons Co., Aiden, 140 Sixth St., Boston, Mass.
 Spedolene—See Tide Water Oil Co.
 Speedway—See Red "C" Oil Mfg. Co.
 Spermolene—See Bliven & Carrington.
 Standard Oil Co. of N. Y., 36 Broadway, New York, N. Y. "Polarine."
 Stevenson Bro. & Co., 110 Race St., Philadelphia, Pa. "Gold Medal."
 Stock Xylite Grease & Oil Co., G. B., 619 Water St., Port Huron, Mich. "Xylite."
 Street & Co., J. D., 41st St. & Park Ave., St. Louis, Mo. "Ideal."
 Sullivan Oil Co., 413 N. Wells St., Chicago, Ill.
 Sun Co., Finance Bldg., Philadelphia, Pa. "Nusco."
 Superba—See Curry Bros. Oil Co.
 Superior—See Great Western Oil Co.
 Superior Flake Graphite Co., 76 W. Monroe St., Chicago, Ill. (See page 433.)
 Superior Oil Co., 1426 W. Third St., Cleveland, Ohio.
 Supreme—See Gulf Refining Co.
 Sutherland & Co., P., 232 Milk St., Boston, Mass. "Velvet."
 Swan & Co., Aiden S., 135 Front St., New York, N. Y. "Swanovia."
 Swan & Finch Co., 165 Broadway, New York, N. Y. "Atlas," "Gearcase," "Cupese," "Bison," "Calypsol," "Cascade."
 Swanovia—See Swan & Co.
 Swastika—See McLean-Jones Oil & Supply Co.
 Sweet, Charles F., 247 State St., Hartford, Conn. "Climax," "Black Diamond."

Everything is listed under the NOUN or principal word

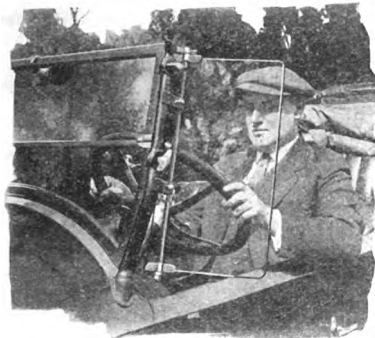


The Johnston Visible Gasoline Filter For Stewart Vacuum Tanks

This Visible Gasoline Filter provides adequate means for filtering every drop of gasoline before it enters the tank. It positively eliminates all water, lint, grit and dirt.

Many Vacuum tank and carburetor troubles are eliminated through the use of the Johnston Visible Gasoline Filter. By raising the hood of the car a glance at the glass bowl shows whether it requires cleaning or not. An absolute necessity that every car owner should place on his car. The price of \$3.00 complete, is a trifle compared to the great satisfaction obtained by its installation. Write for circular and complete information pertaining to sales territory.

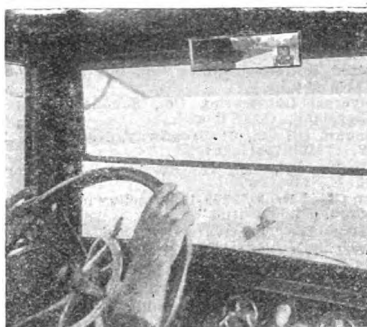
JOHNSTON Clear Vision Windshield Wings



The demand for Johnston Clear Vision Windshield Wings gives jobbers and dealers an opportunity to enjoy big, profitable sales. Combination black and nickel finish—all steel parts Parkerized and with black eggshell finish. All other parts heavily nicked.

Made in three sizes: 10x18, 10x20 and 10x22 inch. Four types of brackets: A, B, C and D. Prices as follows: 18, 20 and 22 inch, with Type A, B and C brackets, \$25.00 per pair. With Type D bracket, \$27.50 per pair. Write for specification list, showing size of wing and type of brackets required.

JOHNSTON Cop Spotters



Johnston Cop Spotters mean big returns for jobbers and dealers who realize the importance of stocking the most practical and efficient rear vision mirrors on the market.

Types A, B and C, made with solid cast brass adjustable bracket, heavily nicked. Have 3x10 inch Belgian Silvering quality plate glass Mirrors, silvered with non-oxidizing silver. Types D and E have same quality mirror but are steel-stamped and black eggshell finish.

Types C-1, same type bracket as C, with flange horizontal instead of vertical. For installation on roof of closed cars, such as Franklin and others with pointed front.

Price of A, B, C and C-1, \$5.00; D and E, \$3.00. Send for folder showing complete line and all information.

Johnston Beveled Plate Glass Curtain Windows

The day of the old fashioned celluloid curtain windows is past. Johnston Beveled Plate Glass Curtain Windows have taken their place.

They add a touch of finished distinction and character to the motor car that cannot be

duplicate. They never rattle, sag or become unsightly. That's why there are over 2,000,000 now in daily use—that's why the demand from distributors and dealers is growing by leaps and bounds. Details regarding territory and sales proposition sent on request.

MANUFACTURED BY

WM. R. JOHNSTON MANUFACTURING CO.

451-469 E. OHIO STREET, CHICAGO

MAKER OF THE FAMOUS

Johnston Standard Plain Type
and Winter Enclosure Windows



TRADE MARK

REGISTERED

CATALOG AND PRICES
ON REQUEST

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GREASES, Cup and Gear (Continued)

Sycro Gear Kling—See Symonds Co.
 Sylvan—See Pennsylvania Lubricating Co.
 Symonds Co., Joseph H., Westfield, Mass.
 "Sycro Gear Kling."
 Texaco—See Texas Co.
 Texas Co., 17 Battery Pl., New York, N. Y.
 "Texaco," "Thubau."
 Thermo—See Haggerty Refining Co.
 Thubau—See Texas Co.
 Tide Water Oil Sales Corp., 11 Broadway,
 New York, N. Y. "Veedol," "Spedolene,"
 "Cupolene."
 Tilton Lubricants Co., 1220 San Pedro St.,
 Los Angeles, Cal.
 Transcontinental Oil Co., Benedum-Trees
 Bldg., Pittsburgh, Pa. "Marathon."
 Tulo—See Universal Lubricating Co.
 Twentieth Century—See Motor Mica Products
 Co.
 Tygert Co., E. A., 126 N. Front St., Philadel-
 phia, Pa. "Motorlube."
 Union Oil Co., of California, Union Oil Bldg.,
 Los Angeles, Cal. "Redline."
 Union Petroleum Co., Widener Bldg., Philadel-
 phia, Pa.
 Unity—See Curry Bros. Oil Co.
 United States Graphite Co., Saginaw, Mich.
 "Grafene."
 Universal Lubricating Co., Schofield Bldg.,
 Cleveland, O. "Tulc."
 Vacuum Oil Co., 61 Broadway, New York, N. Y.
 "Mobilubricant."
 Valvoline Oil Co., 11 Broadway, New York,
 N. Y.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chi-
 cago, Ill. "Dutch."
 Veedol—See Tide Water Oil Co.
 Velvet—See O'Neill Oil & Paint Co.
 Velvet—See Sutherland & Co.
 Velvet—See Winne, Howard B.
 Veracity—See Warren Refining & Chemical Co.
 Visco Motor Oil Co., 2104 Superior Ave., N. W.,
 Cleveland, O.
 Viscos—See National Oil & Supply Co.
 Viscosity Oil Co., 1101-03 W. 37th St., Chi-
 cago, Ill.
 Wadhams Oil Co., 359 Clinton St., Milwaukee,
 Wis. "Badger."
 Warren Refining & Chemical Co., Cleveland,
 O. "Veracity."
 Waverly Oil Works Co., 54th St. & A. V. R.
 R., Pittsburgh, Pa.
 Western Chemical Mfg. Co., 151 Sixth St.,
 Milwaukee, Wis. "Owl."
 White & Bagley Co., Worcester, Mass.
 "Oilsun." (See page 607.)
 Whitmore Mfg. Co., 35 Iron Ct., Cleveland, O.
 Whis—See Hollingshead Co.
 Wilhelm Oil Co., 2261 Hampden Ave., St.
 Paul, Minn. "Willoco."
 Willoco—See Wilhelm Oil Co.
 Winn, Wm. R., 143 Maiden Lane, New York,
 N. Y.
 Winne, Howard B., 714 W. Jackson Blvd.,
 Chicago, Ill. "Velvet."
 Wolverine Lubricants Co., 44 Whitehall
 St., New York, N. Y. (See page 607.)
 Wonder Worker—See Hall-Thompson Co.
 Wood Co., W. A., 373 Atlantic Ave., Boston,
 Mass. "Perfection."
 Xylite—See Stock Xylite Grease & Oil Co.
 Youkim—See Young Co.
 Young Co., Frank L., 111 Purchase St., Bos-
 ton, Mass. "Youkim."
 Zone Oil Co., W. 11th St., Cleveland, O.
 Zurn Co., O. F., 2786-23 N. Broad St., Phila-
 delphia, Pa. "Detroit."

GRIDS, CAMP STOVE—See Stoves, Camp

GRINDERS, LATHE—See Attachments,
 Lathe Cylinder Grinding

GRINDERS, Chucking

Bryant Chucking Grinder Co., 257 Clinton St.
 Springfield, Vt.

GRINDERS, Crank Pin

Landis Tool Co., Waynesboro, Pa.
 (See page 439.)

Norton Grinding Co., New Bond St., Worces-
 ter, Mass.

Pratt & Whitney Co., 111 Broadway, New
 York, N. Y.

GRINDERS, CUTTER — See Grinders,
 Reamer and Cutter

GRINDERS, Cylinder

(For Cylinder Grinding Lathe Attachments—See At-
 tachments, Lathe Cylinder Grinding)

Brown & Sharpe Mfg. Co., Promenade St.,
 Providence, R. I.

Cincinnati Electrical Tool Co., 1501-03 Free-
 man Ave., Cincinnati, O.

Eagle Motor Works, 1411 E. Franklin St.,
 Minneapolis, Minn.

Heald Machine Co., Worcester, Mass.
 (See page 441.)

Landis Tool Co., Waynesboro, Pa.
 (See page 439.)

Madison Machine Tool Co., 1245 E. Washing-
 ton Ave., Madison, Wis.

Micro—See Schmidt Co.

Schmidt Co., B. L., 417 W. Fourth St., Daven-
 port, Ia. "Micro."

Vulcan Appliance Co., 512-14 Bank Bk.,
 Denver, Colo.

Whitney & Son, Baxter D., Winchendon,
 Mass.

GRINDERS, Disc

Badger Tool Co., Fifth & Portland Sts., Be-
 loit, Wis.

Bealy & Co., Charles H., 118-24 N. Clinton St.,
 Chicago, Ill.

Diamond Machine Co., 9 Coddling St., Provi-
 dence, R. I.

Gardner Machine Co., 410 Bushnell St., Be-
 loit, Wis.

Hoysradt & Case, 131 Cornell St., Kingston,
 N. Y.

Modern Pattern & Machine Co., 451-53 Monroe
 Ave., Detroit, Mich.

Ramsen Mfg. Co., 320 Eighth St., Oshkosh,
 Wis.

Rowbottom Machine Co., Waterbury, Conn.

Taylor & Fenn Co., 54-70 Arch St., Hartford,
 Conn.

Valley City Machine Works, 12-16 Campau
 Ave., N. W., Grand Rapids, Mich.

GRINDERS, Drill

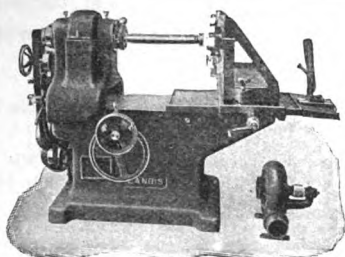
Bellevue Industrial Furnace Co., 2971 Belle-
 vue Ave., Detroit, Mich.

Grand Rapids Grinding Machine Co., 29 Ot-
 tawa Ave., N. W., Grand Rapids, Mich.

Morse Twist Drill & Machine Co., 163 Pleasant
 St., New Bedford, Mass.

New Yankee—See Wilmarth & Morman Co.

Everything is listed under the NOUN or principal word



No. 5 CYLINDER GRINDING MACHINE

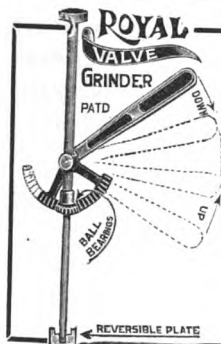
The Landis Cylinder grinding machine is quick acting and accurate and is an especially valuable tool in any repair shop or garage. It turns out first-class work on cylinders as well as handles a variety of odd grinding jobs with the same degree of accuracy.

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Tools that Should be in Every Garage

Royal Valve Grinder is the sturdiest, handiest, fastest and most satisfactory ball-bearing valve grinding tool on the market. Grinds all valves and is so designed that even the unskilled operator can do with it exactly what the hardness, size and condition of the valve requires. The oscillating motion may be varied at will. List Price, \$2.00. Sold with Money-Back Guarantee.

Just's Simplicity Valve Grinder and Refacer

refaces, edges, thins and reshapes distorted and burned valve heads, saving time and replacement expense. Will correctly reface any valve that can be reinserted in the valve guide. A few turns is all that is required to reface the poorest of valves. Retail price, \$10.00. Fully guaranteed.

Universal Equipment and Supply Co.
Syracuse, N. Y.



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STARTERS

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ECLIPSE
DRIVE

AUTOMATIC
ENGAGING &
DISENGAGING

194 Motor Car and Truck Builders Use It
ECLIPSE MACHINE CO. **ELMIRA N. Y.**

CARBON—ALLOY—TOOL STEEL
FORGINGS

THE CLEVELAND DROP FORGE COMPANY

3800 SUPERIOR AVENUE, CLEVELAND, OHIO

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GRINDERS, Drill (Continued)

Sellers & Co., Wm., 1600 Hamilton St., Philadelphia, Pa.
 Washburn Shops, Boynton St., Worcester, Mass. "Worcester."
 Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich. "New Yankee."
 Worcester—See Washburn Shops.

GRINDERS, ELECTRIC PORTABLE—See Drills, Electric Portable**GRINDERS, Internal**

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Churchill-Morgan-Crittsinger, 393 Main St., Worcester, Mass.
 Cincinnati Grinder Co., 2233 Colerain Ave., Cincinnati, O.
 McCulloch Machine Co., A. P., 216 High St., W. Germantown St., Dayton, O.
 Heald Machine Co., Worcester, Mass. (See page 441.)
 Landis Tool Co., Waynesboro, Pa. (See page 439.)
 Lansing Stamping Co., Lansing, Mich. (See page 811.)
 Micro—See Schmidt Co.
 Modern Tool Co., State & Second Sts., Erie, Pa.
 Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.
 Schmidt Co., B. L., 417 W. Fourth St., Davenport, Ia. "Micro."
 Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 Thompson Grinder Co., 604 E. Main St., Springfield, O.
 Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.
 Van Norman Machine Tool Co., 160 Wilbraham Ave., Springfield, Mass.

GRINDERS, Piston Ring

Alert—See Harding, s. B.
 Harding, s. B., Waukesha, Wis. "Alert."
 Heald Machine Co., Worcester, Mass. (See page 441.)
 Walker Co., O. S., Rockdale St., Worcester, Mass.

GRINDERS, Plain Tool

American Grinder Mfg. Co., 148 Broadway, Milwaukee, Wis.
 Athol Machine Co., Athol, Mass.
 Battle Axe—See Fry Mfg. Co.
 Blount Co., J. G., Everett, Mass.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Builders Iron Foundry, 9 Coddling St., Providence, R. I.
 Clizbe Bros. Mfg. Co., W. Harrison St., Plymouth, Ind.
 Columbia Mfg. Co., Belleville, Ill.
 Diamond Machine Co., 9 Coddling St., Providence, R. I.
 Ferodowill Mfg. Co., 214 W. Indiana Ave., St. Paul, Minn. "Ferro."
 Ferro—See Ferodowill Mfg. Co.
 Fitchburg Grinding Machine Co., 76 Winter St., Fitchburg, Mass.
 Fry Mfg. Co., R. I., 2224 N. Ninth St., St. Louis, Mo. "Battle Axe."

Glow Electric Co., 219 Walnut St., Cincinnati, O.
 Greenfield Machine Co., 36 Haywood St., Greenfield, Mass.
 Johnson—See U. S. Electrical Mfg. Co.
 Kerrihard Co., Red Oaks, Ia.
 La Salle Tool Co., 505 Second St., La Salle, Ill.
 Landis Tool Co., Waynesboro, Pa. (See page 439.)
 Luther Grinder Mfg. Co., Milwaukee, Wis.
 Modern Tool Co., State & Second Sts., Erie, Pa.
 National Acme Co., Cleveland, O. (See page 601.)
 Norton Grinding Co., New Bond St., Worcester, Mass.
 Oesterlein Machine Co., 2850 Spring Grove Ave., Cincinnati, O. "Ohio."
 Ohio—See Oesterlein Machine Co.
 Partridge, E. O., 2047 W. Lake St., Chicago, Ill.
 Ransom Mfg. Co., 320 Eighth St., Oshkosh, Wis.
 Royersford Foundry & Machine Co., Royersford, Pa.
 St. Louis Machine Tool Co., 922-32 Loughborough Ave., St. Louis, Mo.
 Stapf & Co., John B., Dunkirk, N. Y.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 759.)
 Tabor Mfg. Co., 1740 Hamilton St., Philadelphia, Pa. "Taylor."
 Taylor—See Tabor Mfg. Co.
 U. S. Electrical Mfg. Co., 300 S. Central Ave., Los Angeles, Cal. "Johnson." (See page 561.)
 Valley City Machine Works, 12-16 Campau Ave. N. W., Grand Rapids, Mich.
 W & P—See Webster & Perks Tool Co.
 Walker Grinder Co., Worcester, Mass.

GRINDERS, Reamer and Cutter

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Clough, R. M., Tolland, Conn.
 Grand Rapids Grinding Machine Co., 29 Ottawa Ave. N. W., Grand Rapids, Mich.
 Greenfield Machine Co., 36 Haywood St., Greenfield, Mass.
 Greenfield Tap & Die Corp., Greenfield, Mass. (See page 855.)
 Harris Engineering Co., H. E., 1041-55 Broad St., Bridgeport, Conn.
 Ingersoll Milling Machine Co., Douglas & Willoughby Sts., Rockford, Ill.
 Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.
 Manhattan Machine & Tool Works, 40-50 Market Ave., N. W., Grand Rapids, Mich.
 Oesterlein Machine Co., 2850 Spring Grove Ave., Cincinnati, O. "Ohio."
 Ohio—See Oesterlein Machine Co.
 Thompson Grinder Co., 604 E. Main St., Springfield, O.
 Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.
 Walker Co., O. S., Rockdale St., Worcester, Mass.
 Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich.
 Woods Engineering Co., 103 E. Patterson St., Alliance, O.

GRINDERS, RING—See Grinders, Piston Ring

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The Dearborn Equipment Co. manufacture a full line of garage equipment, specializing in machinery and tools for Ford Service Stations.

You are invited to send for further information regarding the Dearborn Line.

Dearborn Equipment Co.
Kalamazoo
Mich.

Grinding Machines

We manufacture a machine especially designed to grind the bore of cylinders or any large, awkward-shaped casting.

Our internal grinders finish the holes in gears, connecting rods, ball races, etc. It is also valuable in tool rooms for gauges, dies or bushings, grinding either straight or tapered holes.

Piston rings or any flat work which requires facing is best handled on our surface grinders, 8", 12" and 16" size.

No other method of chucking the work is as rapid or successful as with a Heald Magnetic Chuck. Built in all sizes, rotary or rectangular shape.

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Ready for distribution July 1, a pedal pad designed exactly to fit the latest models of the

BUICK AND STUDEBAKER LINES

We now have twenty-three different shapes and sizes of

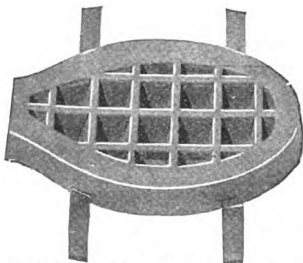
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to fit every conceivable style of brake and clutch pedal. Write us for full listing, prices, and attractive selling plan. Some jobbing territory open.

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Heavy Duty Grease Pump

Portable, compact—provides the satisfactory method of handling heavy transmission greases or oils, without waste, and grease is a profitable line for the dealer if he is equipped to handle it properly. An O'Brien will fill the average differential or transmission as quickly as the supply of gasoline and cylinder oil can be replenished. Specifications: Tank—18 gauge steel. Capacity, 125 lbs. Grease, 15 1/4 gal. Oil. Cylinder—3" bore. Valve, 90 degree three-way, hand operated. Handle—steel, with reversing ratchet. Capacity—1/2 pint of light lubricant or heavy or 1/4 pint of light lubricant per lever stroke. Gauge—Graduated for light, medium or heavy grease. Hose—High-grade grease hose, 2 nozzles std. pipe threads 1/2"-3/8". Net weight, 85 lbs. Ship. weight, 140 lbs. List price, \$95.00.

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Fosnacht Valve Reseater

The advantages of a Fosnacht lie in its precision of adjustment to the job. Aligns and cuts valves and valve seats perfectly in 1/4 the time required by hand, without taking down the motor. It is mechanically impossible to cut a valve inaccurately, because of the automatic screw feed. The Fosnacht is widely known as "the garage man's friend"—it saves money and valuable time—makes profits and satisfaction surer. List price, \$30.00.

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Satisfaction Guaranteed or Money Refunded

Paro's Improved
No. 3 Emergency Ford Axle
For bringing in Fords with broken rear axle—it's the thing. Attaches quickly and easily to housing flange of car axle, and puts Ford back on its own wheels, clears shock absorbers. 8 1/2" x 9" by 8 1/4" by 7 1/4". Weight, 8 1/2 lbs. Makes towing safe, fast and sure. List price, \$3.00. All Paro products are sold only on a "gold-bond" guarantee of satisfaction in service or money refunded.

J. S. Paro Co.

Manufacturers

1416 South Michigan Avenue
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GRINDERS, Surface

Blanchard Machine Co., 64 State St., Cambridge, Mass.
 Bridgeport Safety Emery Wheel Co., 82 Knowlton St., Bridgeport, Conn.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Diamond Machine Co., 9 Coddling St., Providence, R. I.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Heald Machine Co., Worcester, Mass. (See page 441.)
 La Salle Tool Co., 505 Second St., La Salle, Ill.
 Landis Tool Co., Waynesboro, Pa. (See page 439.)
 Manhattan Machine & Tool Works, 40-50 Market Ave., N. W., Grand Rapids, Mich.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Springfield Mfg. Co., 217 Mt. Grove St., Bridgeport, Conn.
 Thompson Grinder Co., 604 E. Main St., Springfield, O.
 Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.
 Valley City Machine Works, 12-16 Campau Ave. N. W., Grand Rapids, Mich.
 Walker Co., O. S., Rockdale St., Worcester, Mass.
 Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich.

GRINDERS, Swing Frame

Pittsburg Grinding Wheel Co., Rochester, Pa.
 Safety Emery Wheel Co., Springfield, O.
 Springfield Mfg. Co., 217 Mt. Grove St., Bridgeport, Conn.

GRINDERS and CUTTERS, Timer Refacing, for Fords

Inland Metal Products Co., Columbus, Ind.
 McCulloch Mfg. Co., 216 High St., Boston, Mass.

GRINDERS, TOOL—See Grinders, Plain Tool; also Grinders, Wet Tool**GRINDERS, Universal**

American Tool & Machine Co., 10 High St., Boston, Mass.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Cincinnati Grinder Co., 3233 Colerain Ave., Cincinnati, O.
 Greenfield Machine Co., 16 Haywood St., Greenfield, Mass.
 Landis Tool Co., Waynesboro, Pa. (See page 439.)
 Modern Tool Co., State & Second Sts., Erie, Pa.
 Norton Grinding Co., New Bond St., Worcester, Mass.
 Oakley Machine Tool Co., Marburg Ave. & B. & O. R. R., Cincinnati, O.
 Ott Grinder Co., 217-23 W. Tenth St., Indianapolis, Ind.
 Sanford Mfg. Co., F. C., 2060 Fairfield Ave., Bridgeport, Conn.
 Taft-Peisce Mfg. Co., Woonsocket, R. I.
 Thompson Grinder Co., 604 E. Main St., Springfield, O.

Universal Grinding Machine Co., 67 Walnut St., Fitchburg, Mass.
 Wilmarth & Morman Co., 1179 Monroe Ave., Madison, Wis.

GRINDERS, VALVE—See Machines, Valve Seating; also Tools, Valve Grinding**GRINDERS, Wet Tool**

Blount Co., J. G., Everett, Mass.
 Bridgeport Safety Emery Wheel Co., 82 Knowlton St., Bridgeport, Conn.
 Diamond Machine Co., 9 Coddling St., Providence, R. I.
 Gisholt Machine Co., 1215 E. Washington Ave., Madison, Wis.
 Hoysradt & Case, 131 Cornell St., Kingston, N. Y.
 Lutter & Gies Co., 253 Lake St., Milwaukee, Wis. "Milwaukee."
 Milwaukee—See Lutter & Gies.
 Ransom Mfg. Co., 320 Eighth St., Oshkosh, Wis.
 Sellers & Co., Wm., 1600 Hamilton St., Philadelphia, Pa.
 Springfield Mfg. Co., 217 Mt. Grove St., Bridgeport, Conn.
 Sterling Grinding Wheel Co., Tiffin, O. (See page 959.)
 Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 Valley City Machine Works, 12-16 Campau Ave., N. W., Grand Rapids, Mich.
 W & P—See Webster & Perks Tool Co.
 Western Tool & Mfg. Co., Springfield, O.
 Webster & Perks Tool Co., Springfield, O. "W & P."

GRINDING COMPOUNDS—See Compounds, Valve Grinding**GRINDING MACHINES, VALVE—See Machines, Valve Grinding****GRINDING WHEELS—See Wheels, Grinding****GRIPS, HAND—See Protectors, Door****GRIPS, NON-SKID—See Chains or Grips, Non-Skid; also Bands, Non-Skid****GRIPS, Pedal**

(Rubber pads for applying to clutch and brake pedals to prevent feet from slipping)

Acorn Motor Equipment Corp., 44 Penn St., Brooklyn, N. Y. "Hadco." (See page 121.)
 Allen—See Cushion Pedal Co.
 Auto Pedal Pad Co., 218-20 W. 53d St., New York, N. Y. "Perfection."
 Brickey, R. S., Aberdeen, S. Dak.
 Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
 Cushion Pedal Co., 287 San Fernando Rd., Los Angeles, Cal. "Allen." (See page 441.)
 Dickson Auto Parts Co., 2 Columbus Circle, New York, N. Y.
 Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. (See page 265.)
 Hadco—See Acorn Motor Equipment Corp.
 Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 835.)

Everything is listed under the NOUN or principal word

GRIPS, Pedal (Continued)

Neverslip—See Rives Mfg. Co.
 Perfection—See Auto Pedal Pad Co.
 Rich Mfg. Co., 69-71 Greene St., New York, N. Y. "Rico."
 Rico—See Rich Mfg. Co.
 Rives Mfg. Co., Geo. H. Woolworth Bldg., New York, N. Y. "Neverslip."
 Thermoid Rubber Co., Trenton, N. J. (See page 531.)
 Williams Soft Pedal Co., Chamber of Commerce Bldg., Cedar Rapids, Iowa.

GRIPS, Pedal, for Fords

(Rubber pads for applying to pedals to prevent feet from slipping)

Allen—See Cushion Pedal Co.
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Auto Pedal Pad Co., 218-20 W. 52d St., New York, N. Y. "Perfection."
 Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill. "Fullfoot."
 Cushion Pedal Co., 237 San Fernando Road, Los Angeles, Cal. "Allen."
 (See page 441.)
 Dickson Auto Parts Co., 2 Columbus Circle, New York, N. Y.
 Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y. "Safety-First."
 Fullfoot—See Cloud Accessories Corp.
 Grant Auto Appliance Co., 315 S. Clinton St., Chicago, Ill. "Surety."
 (See page 641.)
 Hill Pump Valve Co.—See Zinke Co.
 Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 835.)
 Neverslip—See Rives Mfg. Co.
 Perfection—See Auto Pedal Pad Co.
 Racine Accessories Mfg. Co., 14th & Clark Sts., Racine, Wis. "Slip-Knot."
 Rich Mfg. Co., 69-71 Greene St., New York, N. Y. "Rico."
 Rico—See Rich Mfg. Co.
 Rives Mfg. Co., Geo. H. Woolworth Bldg., New York, N. Y. "Neverslip."
 Safety-First—See Ever-Right Products Corp.
 Slip-Knot—See Racine Accessories Mfg. Co.
 Stado—See Stader Metal Specialty Co.
 Stader Metal Specialty Co., 210 S. Canal St., Chicago, Ill. "Stado."
 Surety—See Grant Auto Appliance Co.
 Utility Sure-Grip—See Zinke Co.
 Zinke Co., 1823-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility Sure-Grip.") (See page 771.)

GRIPS, Spark and Throttle Lever

(Rubber or Composition Grips or Handles for spark and throttle levers)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.
 Stokes Rubber Co., Jos. Taylor St., Trenton, N. J.

GRIPS, Spark and Throttle Lever, for Fords

Hasco—See Howard Auto Specialties Co.
 Howard Auto Specialties Co., Swampscott, Mass. "Hasco."
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.

GRIPS, STEERING WHEEL—See Covers, Steering Wheel Rim

GRIPS, Tractor Wheel

Ottwell Tractor Equipment Co., 6538 Livernois Ave., Detroit, Mich.

GROMMETS and EYELETS

American Brass Co., Waterbury, Conn. (See page 161.)
 Brewer Tichener Corp., Cortland, N. Y.
 Stimpson Co., Edwin B., 70 Franklin Ave., Brooklyn, N. Y.
 Traut & Hine Mfg. Co., New Britain, Conn.

GUARDS, MUD—See Fenders

GUARDS, Oil for Fords

American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.
 Denco Co., 89 Broadway, Buffalo, N. Y.

GUARDS, RADIATOR—See Fenders or Guards, Truck Radiator

GUARDS, Timer Wire, for Fords

King—See Pawnee Mfg. & Sales Co.
 Pawnee Mfg. & Sales Co., Pawnee City, Neb. "King."

GUIDES, BELT, FOR FORDS—See Guides, Fan Belt

GUIDES, BRAKE ROD, FOR FORDS—See Supports, Brake Rod

GUIDES, Fan Belt, for Fords

(To prevent belt slipping off pulley)

Adco—See American Automatic Devices Co.
 American Automatic Devices Co., Chicago, Ill. "Adco." (See page 251.)
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 BB—See Bayne Mfg. Co.
 Bayne Mfg. Co., Bushnell, Ill. "BB." (See page 149.)
 Casco Mfg. Co., Jackson St., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)
 Cooper Auto Supply Co.—See Casco Mfg. Co.
 Dependable—See Gahm-McCormick Co.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Gahm-McCormick Co., 808 E. Main St., Streator, Ill. "Dependable." (See page 171.)
 Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.
 Pedersen Lubricator Co., 636 First Ave., New York, N. Y. "Stay-On."
 Republic Auto Parts Co., 21-25 Tenth St., Long Island City, N. Y. "Sterling."
 Stay-On—See Pedersen Lubricator Co.
 Sterling—See Republic Auto Parts Co.
 Taco—See Tractor Appliance Co.
 Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Taco."

GUIDES, ROAD—See Maps, Road

Everything is listed under the NOUN or principal word

GUIDES, Tractor Steering

(For automatically steering or guiding tractor when plowing)

Hansmann Mfg. Co., Long Prairie, Minn.
Willis-Flask Mfg. Co., 202 N. Locust St.,
Pittsburg, Kans.

GUN LOADERS—See Loaders, Grease Gun

GUN METAL FINISH—See Treating, Heat;
also Enamels, Lacquers and Finishes,
Brass

GUNS, GARAGE GREASE—See Guns,
Portable Garage

GUNS, Grease

Agner Simplex Co., Burlington, Wis. "Simplex."

All-Way—See Famasco Distributing Co.

A-K—See Angsten-Kox Co.

American Automatic Devices Co., Chicago, Ill. "Lightning." (See page 251.)

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."

Anthony Co., 138 West Ave., Long Island City, N. Y.

Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill. "Workwrite."

Atlantic Motor & Supply Co., 63 Gerham St., Boston, Mass.

B. & S. Mfg. Co., 891 Cypress Ave., Brooklyn, N. Y. "X L."

Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.

Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.

Bennett Injector Co., Muskegon, Mich. (See page 447.)

Big Dane—See Miller & Starr Co.

Blue Champion—See Robert-Irwin Mfg. Co.

Boston—See Randall-Falchney Co.

Boston Auto Gage Co., 4 Waltham St., Boston, Mass. "E-Z-Fill." (See page 401.)

Bridgeport Brass Co., Bridgeport, Conn.

Coe-Stapley Mfg. Corp., West Haven, Conn. (See page 487.)

Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)

Crescent Mfg. Co., 129 Rende St., New York, N. Y. (See page 673.)

Douglas Auto Appliance Co., 2845 Chicago Ave., Minneapolis, Minn.

Econo-Lub—See Middle States Oil Co.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Gem," "Jumbo," "Giant." (See page 523.)

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Esex Brass Corp., G. B., 2000 Franklin St., Detroit, Mich.

E-Z-Fill—See Boston Auto Gage Co.

Famasco Distributing Co., 694 Main St., Buffalo, N. Y. (Sole Selling Agents for U. S. All-Way Oil Co., Waterbury, Conn. "All-Way." (See page 185.)

Fisher—See Puritan Mfg. Co.

Forc-Ful—See Zinke Co.

Gem—See Edelmann & Co.

Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."

Giant—See Edelmann & Co.

Harris Hdw. & Mfg. Co., D. P., 34-36 Murray St., New York, N. Y. "Rollfast."

Harris Mfg. Co., D. P., Reading, Pa.

Hipwell Mfg. Co., 825-35 North Ave., Pittsburgh, Pa. "Jumbo."

Horton—See Lyman, Kent E.

I. C. Mfg. Co.—See Zinke Co.

Jackson Grease Gun Co., 518 21st St., Denver, Colo.

James—See Generator Valve Co.

Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Victor."

Jumbo—See Edelmann & Co.

Jumbo—See Hipwell Mfg. Co.

Kellogg Mfg. Co., Rochester, N. Y.

Knapp Mfg. & Supply Co., 241 Water St., New York, N. Y.

Lightning—See American Automatic Devices Co.

Lyman, Kent E., American Trust Bldg., Cleveland, O. "Horton."

Mann Corp., Kankakee, Ill.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. "Silver Giant." (See page 251.)

Middle States Oil Co., Engineers Building, Cleveland, O. "Econo-Lub."

Miller & Starr Co., 250 Green St., Brooklyn, N. Y. "Big Dane."

Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. "Victory." (See page 929.)

Noera Mfg. Co., 21-27 Griggs St., Waterbury, Conn.

O. K. Mfg. Co., 40 Potomac St., Dayton, O.

O'Brien—See Paro Co.

Only Grease Gun Co., Newton, Ia.

Paro Co., H. G., 1416 S. Michigan Blvd., Chicago, Ill. "O'Brien." (See page 441.)

Pioneer—See Stevens & Co.

Pretzel, Herman H., 103 S. Third St., Stillwater, Minn.

Puritan Mfg. Co., 299 Prospect St., Bridgeport, Conn. "Fisher."

Railway Specialty Co., Atchison, Kans. "Rysco."

Randall-Falchney Co., 76 Atherton St., (Jamaica Plain) Boston, Mass. "Boston"

Robert-Irwin Mfg. Co., 427-31 W. Broadway, New York, N. Y. "Blue Champion."

Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon."

Rose Mfg. Co., Frank, Hastings, Neb. (See page 675.)

Rollfast—See Harris Hdw. & Mfg. Co.

Romon—See Roberts & Monroe.

Rowe Co., James C., 714-16 E. Baltimore St., Baltimore, Md.

Rysco—See Railway Specialty Co.

Sidel-Rattner Mfg. Co., Bush Terminal, Brooklyn, N. Y. "Wonder Minute."

Silver Giant—See Mayo-Skinner Mfg. Co.

Simplex—See Agner Simplex Co.

Stevens & Co., 375 Broadway, New York, N. Y. "Pioneer." (See page 197.)

Strickler, T. H., 4231 Wilcox St., Chicago, Ill.

Sunderland Co., Warsaw, Ind. (See page 673.)

Toomey Grease Gun Co., Edmore, N. Dak.

Townsend & Co., S. P., Bloomfield, N. J.

Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.

U. S. All-Way Oil Co.—See Famasco Distributing Co.

Victor—See Judd & Leland Mfg. Co.

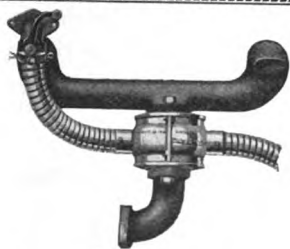
Victory—See Monarch Carriage Goods Co.

Vital Mfg. Co., 7507 Quincy St., Cleveland, O.

Warren Refining & Chemical Co., Cleveland, O.

Warren & Anderson, 404 Boston Bk., Minneapolis, Minn. "Ekern."

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The Losee Protect-O-Motor

IMPROVES COMBUSTION—PREVENTS OIL DILUTION

Breaks up the heavy fuel particles into highly explosive atoms by the proper application of heat. More miles per gallon and increased power. Prevents crank case oil dilution and reduces carbon deposits. For all cars and trucks.

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A well-constructed and efficient cut-out outfit that can be controlled from the dash.



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Pomeroy's Electric Gasifier For All Gasoline Engines

An exceedingly simple device consisting of a cone-shaped heating coil inserted between manifold and carburetor. The car owner himself can install it in a few minutes.

Intensifies low-grade gasoline

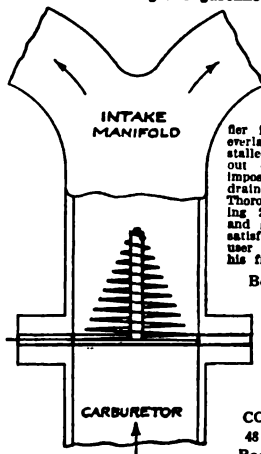
Guarantees a prompt start under all conditions; necessary in winter weather.

The Pomeroy Electric Gasifier is fool-proof and over-lasting. Once installed it cannot get out of order and it imposes no excessive drain on the battery. Thoroughly tested during 2½ years of use and giving more than satisfaction. Every user recommends it to his friends.

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Primer

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Liberal discount to dealers.

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ELECTRIC
COMPANY, Inc.**
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"STARTIT" STARTS ANY CAR IN ANY WEATHER

Manifold Electric Heater and Vaporizer

Starts any car—fits any car—installed by anyone. Heats and vaporizes gasoline at distributing point in manifold and changes it into pure, dry gas and ignition is instantaneous. Can be used on six or twelve volt system. To install simply drill 15/32" hole in intake manifold, tap out with 1/4" standard pipe tap and screw "Startit" in, attach switch to cowl and wire to battery and "Startit" is ready to work.

The first cost is the only one; no repairs or adjustments needed, nothing to get out of order.

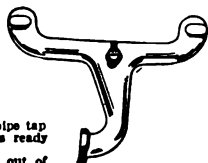
Saves Battery, Gasoline and Money. A ready-seller and good-will maker. Absolutely guaranteed.

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DEALERS—GARAGEMEN: Write us to-day for our trade discounts.

THE STARTIT MANUFACTURING CO.

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SYRACO

Self-Regulating Hot Water Garage Heating System



the requirements of a 1, 2, 3, 4-car garage or larger. Economical in cost of installation and operation.

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Syracuse Radiator Co., Syracuse, N. Y.

An all cast-iron hot water heater with automatic temperature regulator, designed to meet

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GUNS, Grease (Continued)

Weaver Mfg. Co., 3177-79 S. Ninth St., Springfield, Ill. (See page 661.)
 Wonder Minute—See Sidel-Rattner Mfg. Co.
 Wood Mfg. Co., A. J., Leonard Bldg., Grand Rapids, Mich. "Novalva."
 Workwrite—See Armand Machine Works.
 World Metal Products Corp., 8778 111th St., Richmond Hill, N. Y.
 X. L.—See B. & S. Mfg. Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for I. C. Mfg. Co., Chicago, Ill. "Forc-Ful.")

GUNS, Oil

Agner Simplex Co., Burlington, Wis. "Simplex."
 All-Way—See Famasco Distributing Co.
 Anthony Co., 138 West Ave., Long Island City, N. Y.
 Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill. "Workwrite."
 B. & S. Mfg. Co., 891 Cypress Ave., Brooklyn, N. Y. "X. L."
 Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
 Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.
 Bennett Injector Co., Muskegon, Mich. (See page 447.)
 Blue Champion—See Robert-Irwin Mfg. Co.
 Boe Mfg. Co., 941 E. Hennepin Ave., Minneapolis, Minn.
 Bridgeport Brass Co., Bridgeport, Conn.
 Copley—See Randall-Falchney Co.
 Crescent Mfg. Co., 129 Rende St., New York, N. Y. (See page 673.)
 Douglas Auto Appliance Co., 2845 Chicago Ave., Minneapolis, Minn.
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Gem," "Jumbo." (See page 523.)
 Essex Brass Corp., G. B., 2000 Franklin St., Detroit, Mich.
 Famasco Distributing Co., 694 Main St., Buffalo, N. Y. (Sole Selling Agents for U. S. All-Way Oil Co., Waterbury, Conn. "All-Way.") (See page 185.)
 Gem—See Edelmann & Co.
 Generator Valve Co., 47 Dinsmore Pl., Brooklyn, N. Y. "James."
 Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.
 Hancock Mfg. Co., 302 E. Henry St., Charlotte, Mich.
 Harris Hdw. & Mfg. Co., D. P., 24-26 Murray St., New York, N. Y. "Rollfast."
 James—See Generator Valve Co.
 Judd & Leland Mfg. Co., Clifton Springs, N. Y.
 Jumbo—See Edelmann & Co.
 Kellogg Mfg. Co., Rochester, N. Y.
 Knapp Mfg. & Supply Co., 241 Water St., New York, N. Y.
 McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
 Noara Mfg. Co., 21-27 Griggs St., Waterbury, Conn.
 Pretzel, Herman H., 108 S. Third St., Stillwater, Minn.
 Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Copley."
 Robert-Irwin Mfg. Co., 427-31 W. Broadway, New York, N. Y. "Blue Champion."
 Rollfast—See Harris Hdw. & Mfg. Co.
 Rose Mfg. Co., Frank, Hastings, Neb. (See page 675.)
 Simplex—See Agner Simplex Co.

strickler, T. H., 4231 Wilcox St., Chicago, Ill.
 Universal Specialty Co., 1408-07 S. Seventh St., St. Louis, Mo.
 U. S. All-Way Oil Co.—See Famasco Distributing Co.
 Workwrite—See Armand Machine Works.
 World Metal Products Corp., 8778 111th St., Richmond Hill, N. Y.
 X. L.—See B. & S. Mfg. Co.

GUNS, Portable Garage Grease

Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
 Bennett Injector Co., Muskegon, Mich. "Handy Ben." (See page 447.)
 Boe Mfg. Co., 941 E. Hennepin Ave., Minneapolis, Minn.
 Bohannon Mfg. Co.—See Zinke Co.
 Boyle Mfg. Co., 21 Sutter St., Los Angeles, Cal. (See page 183.)
 Ekern-Turk Mfg. Co., Pipestone, Minn.
 Fil-A-Gun—See Rose Mfg. Co.
 Handy Ben—See Bennett Injector Co.
 Midway Mechanical Co., St. Paul, Minn.
 O'Brien—See Paro Co.
 Paro Co., H. G. 1416 S. Michigan Ave., Chicago, Ill. "O'Brien." (See page 441.)
 Pressed Steel Tank Co., 58th & Greenfield Aves., Milwaukee, Wis.
 Rose Mfg. Co., Frank, Hastings, Neb. "Fil-A-Gun." (See page 675.)
 Runyen Mfg. Co., 447 S. Division St., Grand Rapids, Mich.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Bohannon Mfg. Co., Chas., Des Moines, Iowa.)

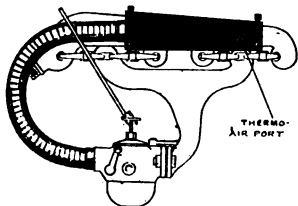
HACK SAW BLADES—See Blades, Hack Saw**HACK SAWS, ROTARY—See Saws and Cutters, Rotary****HAIR PICKING MACHINES—See Machines, Hair Picking****HAIR, Upholstery**

(For Upholstery Mosa—See Moss, Upholstery; for Upholstery Felt—See Felt, Upholstery)

Armour Curled Hair Works, 1355 W. 31st St., Chicago, Ill.
 Bentley Hair Co., Joseph, Pelham Ave., Methuen, Mass.
 Blockson & Co., Michigan City, Ind. (See page 447.)
 Chicago Curled Hair Co., 2801-33 S. Paulina St., Chicago, Ill.
 Delany & Co., (Tacony), Philadelphia, Pa.
 Gordon Bros., Pierce & Orthodox Sts. (Frankford), Philadelphia, Pa.
 Mitchell Co., P. R., Spring Grove & Harrison Aves., Cincinnati, O.
 Morris & Co., U. S. Yards, Chicago, Ill.
 Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Walpert & Co., Fred, 106-108 N. Gay St., Baltimore, Md.
 Wilkens Co., Wm., Frederick Ave., Baltimore, Md.
 Wilson & Co., Thos., 41st St. & S. Ashland Ave., Chicago, Ill.
 Woll & Co., F. P., Church & Tacony Sts. (Frankford), Philadelphia, Pa.
 Woll & Sons Mfg. Co., Moscher & Berks Sts., Philadelphia, Pa.

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For Economy
Thermo-Gasoline Saver
 (Patented)



A saving of 20 to 35% in Gasoline and the insurance of a smooth running car are *guaranteed* to the purchaser of this device.

Works Automatically - Lasts Forever

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STERILIZED CURLED HAIR

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"Every Ounce Is Free From Dirt"



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Put Profit in Lubricant Sales. Barrel Grease and Liquid Injectors, \$30 List. Barrel Oil Injectors, \$20 List. (On truck, \$8 extra.) Barrel Grease Injectors, attaching to head of Steel Drums, \$20 List. (On truck, \$8 extra.) Grease Can Injectors, \$6 List. Cabinet Grease Injectors, \$8.50 List.

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Inventors and Manufacturers of Grease and Oil Handling Devices.

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HAMMERS, COPPER—See Hammers, Soft Metal

HAMMERS, Machinists

Atha Tool Co., Chapel St., Newark, N. J.
Beal Bros., Fourth St., Alton, Ill.
Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Master."
Buffum Tool Co., Louisiana, Mo.
(See page 883.)

Cheney Hammer Corp., H., Little Falls, N. Y.
Clipper Tool Co., 284 Mills St., Buffalo, N. Y.
Cushman Co., Inc., Champaign, Ill.
(See page 887.)

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Han-D," "Multex."
(See page 523.)

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Han-D—See Edelmann & Co.

Heller Bros. Co., 865 Mt. Prospect Ave., New-ark, N. J.

Hyde Park Mfg. Co., Bernharts, Pa.

Master—See Bridgeport Hardware Mfg. Corp.
Maydole Hammer Co., David, 45-61 Lackawanna Ave., Norwich, N. Y.

Milwaukee Tool & Forge Co., 220 Becher St., Milwaukee, Wis.

Multex—See Edelmann & Co.

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Perfect Handle—See Smith & Co.

Pexto—See Peck, Stow & Wilcox Co.

Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."

Stanley Works (Special Productions Dept.), New Britain, Conn.
(See page 457.)

Thomson Drop Forge Co., W. Main St., Plantville, Conn.

V&B—See Vaughan & Bushnell Mfg. Co.

Vaughan & Bushnell Mfg. Co., 2114-28 Carroll Ave., Chicago, Ill. "V&B."

Vlchek Tool Co., 3000 E. 87th St., Cleveland, Ohio.

Warner Hammer Co., Cromwell, Conn.

HAMMERS, Power

Beaudry & Co., 45 Bromfield St., Boston, Mass. "Champion," "Peerless."

Bliss Co., E. W., 29 Adams St., Brooklyn, N. Y.

Bradley & Son, C. C., 432 N. Franklin St., Syracuse, N. Y.

Champion—See Beaudry & Co.

Champion Blower & Forge Co., Harrison Ave. & Charlotte St., Lancaster, Pa.

Dienelt & Eisenhardt, 1304-18 N. Howard St., Philadelphia, Pa.

Justice & Co., P. S., 617 Chestnut St., Philadelphia, Pa.

Little Giant Co., 199 Rock St., Mankato, Minn.

McLane, J. B., North Reading, Mass.

MacGowan & Finigan Foundry & Machine Co., St. Louis, Mo. "Perfect."

Massillon Foundry & Machine Co., Massillon, O.

Nazel Engineering & Machine Works, 4041 N. Fifth St., Philadelphia, Pa.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Peerless—See Beaudry & Co.

Perfect—See MacGowan & Finigan Foundry & Machine Co.

Pettingell Machine Co., 77 Elm St., Amesbury, Mass.

Quickwork Co., Celina Rd., St. Marys, O.
Scranton & Co., 42 Church St., New Haven, Conn.

Toledo Machine & Tool Co., 1420 Hastings St., Toledo, O.

Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

Williams, White & Co., Third Ave. & Euclid St., Moline, Ill.

HAMMERS, RUBBER—See Mallets, Rubber

HAMMERS, Soft Metal

Electric Materials Co., North East, Pa.

Goodell-Pratt Co., Greenfield, Mass.

Graham & Co., James, 293 Wooster St., New Haven, Conn.

Williams & Son, H. A., 106-11 Plymouth St., Jersey City, N. J.

HAMMERS, Steam

Alliance Machine Co., Alliance, O.

Bement—See Niles-Bement-Pond Co.

Chambersburg Engineering Co., Derbyshire St., Chambersburg, Pa.

Erie Foundry Co., 13th & Cranberry Sts., Erie, Pa.

Massillon Foundry & Machine Co., Massillon, O.

Morgan Engineering Co., Alliance, O.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. "Bement."

HAMMOCKS, Baby

Baby Hammock Co., 88 Pearl St., Boston, Mass. "Happy Baby."

Gordon Motor Crib Co., 219 N. State St., Chicago, Ill.

Happy Baby—See Baby Hammock Co.

Hilton Hammock Co., Lyon Bldg., Seattle, Wash.

Jonas, C. N. & F. W., 608 So. Dearborn St., Chicago, Ill. (Sales Distributors East of the Mississippi River for Standley Adjusters.) (See page 138 B.)

Perfection Mfg. Co., 2710 N. Leffingwell Ave., St. Louis, Mo. "Rock-a-Bye."

Rock-a-Bye—See Perfection Mfg. Co.

Standley Skid Chain Co., Boone, Iowa.
(See page 138 B.)

HAMPERS, BASKETS and LUNCH BOXES, Touring

(See also Trunks, Automobile; also Stoves, Camp)

Ajax Trunk & Sample Case Co., 420 W. 125th St., New York, N. Y.

Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Bailey-Fitwell Co., 1313 S. Grand Ave., Los Angeles, Cal.

Berg Auto Trunk & Specialty Co., 400 Lafayette St., New York, N. Y. "Campo."

Burlington Basket Co., 600 N. Main St., Burlington, Ia. "Hawkeye."

Campo—See Berg Auto Trunk & Specialty Co.

Eveready—See Loeb Co.

Hardy, John E., Portland, Ore.

Hawkeye—See Burlington Basket Co.

Icy-Hot Bottle Co., Second & Elm Sts., Cincinnati, O.

Knickerbocker Case Co., 230 N. Clinton St., Chicago, Ill. "Made-Right."

Loeb Co., Ben S., 200 Fifth Ave., New York, N. Y. "Eveready."

Everything is listed under the NOUN or principal word

HAMPERS, BASKETS and LUNCH BOXES, Touring (Continued)

Made-Right—See Knickerbocker Case Co.
 Moats—See Prentiss-Wabers Stove Co.
 Orne Auto Diner Co., Everett, Wash.
 Prentiss-Wabers Stove Co., 85 Spring St., Grand Rapids, Mich. "Moats."
 Refrigo Auto Chest Co., Iroquois River, Mich.
 Warren Leather Goods Co., Worcester, Mass.
 Wilder Mfg. Co., 211-15 Pacific St., Brooklyn, N. Y.
 Winship, W. W., 71 Summer St., Boston, Mass.

HAND CLAMPS—See Clamps

HAND GRIPS—See Protectors, Doors

HAND HORNS—See Horns, Mechanical

HAND LAMPS—See Lamps, Electric Hand

HAND LANTERNS—See Lights, Electric Flash

HAND PASTE—See Soaps, Hand

HAND PUMPS—See Pumps, Hand

HAND PUNCHES—See Punches, Portable Hand

HAND SCREW MACHINES—See Machines, Screw

HAND SOAPS—See Soaps, Hand

HAND WARMERS—See Warmers, Hand

HAND WOUND CLOCKS—See Clocks, Hand Wound

HANDLES, BATTERY—See Handles, Storage Battery

HANDLES, Car Door

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

American Brass Novelty Co., Grand Haven, Mich.

Anchor—See North & Judd Mfg. Co.

Arcade Mfg. Co., Freeport, Ill.

Art Work Shop, 828-36 E. Ferry St., Buffalo, N. Y. (See page 327.)

Attwood Brass Works, Grand Rapids, Mich. (See page 147.)

Auto Brass Mfg. Co., 3514-20 S. Michigan Ave., Chicago, Ill.

Basco—See Briggs & Stratton Co.

Basick Co., Bridgeport, Conn. (See page 311.)

Bremner & Terria Mfg. Co., 137-41 S. Albany Ave., Chicago, Ill.

Briggs & Stratton Co., Milwaukee, Wis. "Basco." (See page 343.)

Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa.

Chicago Cabinet Lock Co., 3341 N. Lincoln St., Chicago, Ill. (See page 541.)

Columbus Brass Co., 540 Dublin Ave., Columbus, O.

Cowles & Co., C., New Haven, Conn. (See page 451.)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.

English & Merriell Co., New Haven, Conn. (See page 539.)

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 540.)

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Hunt & Co., E. J., Dayton, O. (Sales Representatives for Thomson Mfg. Co., S. H., Dayton, O.)

Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Jonah & George, Little's Ct., Merrimac, Mass.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Kings Mfg. Co., 38 Park Row, New York, N. Y.

Loomis Mfg. Co., C. F., 428 Liberty St., Peoria, Ill.

Meyer Scale & Hardware Co., 228 Adams St., Newark, N. J.

Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.

Moline Iron Works, 228 Second St., Moline, Ill.

Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 929.)

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Phoenix Lock Works, 321-27 Third Ave., Newark, N. J.

Sargeant Mfg. Co., New & Summit Sts., Newark, N. J.

Shepard Art Metal Co., Detroit, Mich. (See page 451.)

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.

Sterling Bronze Co., 201 E. 12th St., New York, N. Y.

Ten Elck, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)

Ternstedt Mfg. Co., Detroit, Mich. (See Back Cover.)

Thomson Mfg. Co.—See Hunt & Co.

Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

Waterhouse & Freeman Mfg. Co., 319 N. J. R. R. Ave., Newark, N. J.

White Mfg. Co., 155 Cannon St., Bridgeport, Conn.

Williams, Franklin, 251 Jefferson St., Newark, N. J. (See page 75.)

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

Zagora Mfg. Co., J., 1309 S. Mint St., Charlotte, N. C.

HANDLES, CRANK—See Handles, Starting Crank

HANDLES, DOOR—See Handles, Car Door

HANDLES, Extension Starting Crank for Fords

Danielson Mfg. Co., Frank R., Fairfield, Ia.

HANDLES, Extension Tool

Gardner Specialty Co., 424 Clay St., Scranton, Pa. "Lownsberry."

Lownsberry—See Gardner Specialty Co.

Everything is listed under the NOUN or principal word

HANDLES, Fuse

Safe-T—See Safety Fuse Handle Co.
Safety Fuse Handle Co., 96-104 Spring St.,
 New York, N. Y. "Safe-T."
 (See page 395.)

HANDLES, Starting Crank

(Rubber, Composition of Fibre Handles for Starting Cranks)

American Hard Rubber Co., 11 Mercer St.,
 New York, N. Y.
American Vulcanized Fibre Co., Equitable
 Bldg., Wilmington, Del.
Brandywine Fibre Products Co., 1406
 Walnut St., Wilmington, Del.
 (See page 900.)
Continental Fibre Co., Newark, Del.
 (See page 379.)
Diamond State Fibre Co., Bridgeport, Pa.
Mechanical Rubber Co., C. P. & Nickel Plate
 R. R., Cleveland, O.
National Fibre & Insulation Co., Box
 287, Yorklyn, Del. "S-S." (See page 381.)
S-S—See National Fibre & Insulation Co.
Wilmington Fibre Specialty Co., Wil-
 mington, Del. (See page 379.)

HANDLES, Storage Battery

Beehler Steel Products Co., 1439 N. 13th St.,
 St. Louis, Mo. "Victor."
Mueller Electric Co., 2135 Fairmount Rd.,
 Cleveland, O.
Victor—See Beehler Steel Products Co.

HANDLES, TOOLS—See Handles, Extension Tool**HANGERS and HINGES, Garage Door**

Allith-Prouty Co., Danville, Ill.
 (See page 763.)
Clostitute—See Wagner Mfg. Co.
Coburn Trolley Track Mfg. Co., Blanche St.,
 Holyoke, Mass.
Lane Bros. Co., 48 Prospect St., Poughkeepsie,
 N. Y.
Lawrence Bros., Sterling, Ill.
Louden Machinery Co., 181 Court St., Fair-
 field, Ia.
McKinney Mfg. Co., Liverpool & Metropolitan
 Sts., Pittsburgh, Pa.
Myers & Bro. F. E., 1000 Orange St., Ash-
 land, O.
National Mfg. Co., Sterling, Ill.
Porter Co., J. E., 843 Gulon St., Ottawa, Ill.
 "Straight-Away."
Richards-Wilcox Mfg. Co., Third St. & C. B. &
 Q. R. R. Tracks, Aurora, Ill. "Slidetite."
Slidetite—See Richards-Wilcox Mfg. Co.
Stanley Works (Special Productions
Dept.), New Britain, Conn.
 (See page 457.)
Straight-Away—See Porter Co.
Wagner Mfg. Co., Cedar Rapids, Ia. "Clos-
 tite."

HANGERS, Hat

(Tip for hanging hats on robe racks—See also Racks,
 Hat)

Buckeye—See Central Brass & Fixture Co.
Central Brass & Fixture Co., Segler & Hughes
 Bldg., Springfield, O. "Buckeye."

HANGERS, LICENSE—See Holders,
 License; also Numbers, License

HANGERS, Pressed Steel Step

(Pressed Steel Step or Running Board Hangers or
 Brackets; for Forged Hangers—See
 Forgings, Drop)

Bettcher Stamping & Mfg. Co., 3106 W. 61st
 St., Cleveland, O.
Bossert Corp., Utica, N. Y.
Brewer Tichener Corp., Cortland, N. Y.
Buffalo Pressed Steel Co., Buffalo, N. Y.
Cleveland Hardware Co., 4500 Hamilton Ave.,
 Cleveland, O.
Crosby Co., Buffalo, N. Y. (See page 813.)
Detroit Pressed Steel Co., Detroit, Mich.
 (See page 943.)
Forsyth Bros. Co., Harvey, Ill.
 (See page 949.)
Globe Machine & Stamping Co., Cleve-
 land, O. (See page 155.)
Hydraulic Pressed Steel Co. of The Hydraulic
Steel Co., Cleveland, O.
Parish Mfg. Co., Reading, Pa.
Parish & Bingham Corporation, Cleve-
 land, O. (See page 242.)
Powell Pressed Steel Co., Hubbard, O.
 (See page 949.)
Rochester Pressed Steel Co., 35-37 Ford St.,
 Rochester, N. Y.
Sharon Pressed Steel Co., Sharon, Pa.
 (See page 391.)
Transue & Williams Steel Forging Corp.,
 Alliance, O. (See page 805.)

HANGERS, Spring for Fords

A-K—See Angsten-Kox Co.
Angsten-Kox Co., 221-23 W. Randolph St.,
 Chicago, Ill. "A-K."
Park Mfg. Co., 47 Lagrange St., Worces-
 ter, Mass. (See page 613.)

HANGERS, STEP—See Hangers, Pressed Steel Step**HARD RUBBER**—See Rubber, Hard**HARDENING COMPOUNDS**—See Com-
 pounds, Case Hardening**HARDENING FURNACES**—See Furnaces,
 Annealing and Case Hardening**HARDENING MATERIALS**—See Com-
 pounds, Case Hardening**HARDENING, METAL**—See Treating, Heat**HARDNESS TESTING INSTRUMENTS**—
 See Instruments, Metal Testing**HARNESS, WIRING, FOR FORDS**—See
 Sets, Wiring**HASSOCKS, Automobile**

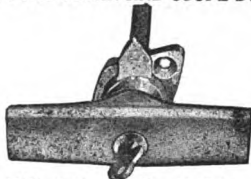
(For Metal Foot Racks—See Racks, Foot)
Chicago Hassock Co., 2427 Warren Ave., Chi-
 cago, Ill.

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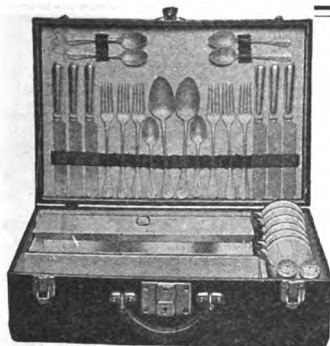
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3 1/4" x 3/8" Bar—Other styles in stock. Write for name of distributor in your territory.



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Curtain Posts
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HAT HANGERS—See Hangers, Hat

HATCHETS, MOTORISTS—See Axes,

HAT RACKS—See Racks, Hat

HATS, MOTORISTS—See Caps, Motorists

HEADLIGHT BRACKETS—See Brackets, Automatic Headlight

HEADLIGHT BULBS—See Lamps, Miniature Incandescent

HEADLIGHT CONTROLLERS—See Dimmers or Shades, Headlight

HEADLIGHT CONTROLLERS FOR FORDS—See Dimmers or Shades, Headlight; also, Regulators, Headlight

HEADLIGHT DEFLECTORS—See Dimmers or Shades, Headlight

HEADLIGHT DIMMERS—See Dimmers or Shades, Headlight

HEADLIGHT GASKETS—See Gaskets, Headlight Lenses

HEADLIGHT REFLECTORS—See Reflectors, Headlight

HEADLIGHT REGULATORS FOR FORDS—See Regulators, Electric Light

HEADLIGHT SHADES—See Dimmers or Shades, Headlight

HEADLIGHTS, ACETYLENE—See Lamps, or Headlights, Acetylene

HEADLIGHTS, ACETYLENE TRACTOR—See Headlights, Tractor Acetylene

HEADLIGHTS, Electric

(See also Lamps, Electric; for Acetylene Headlights—See Lamps, Acetylene)

Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O.

American Auto Lamp Co., 20 Desbrosses St., New York, N. Y. "Rialto."

B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.

Brown Mfg. Co., Jno. W., Columbus, O. (See page 507.)

Cor-Co-Lite—See Corcoran Lamp Co.

Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."

Dietz Co., R. E., 60 Laight St., New York, N. Y. "Radio," "Sentinel."

Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.

E & J—See Edmunds & Jones Corp.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich. "E. & J."

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.

Hall Lamp Co., C. M., Detroit, Mich. "Solar."

Hankee Electric Mfg. Co., 3330 University Ave., S. E., Minneapolis, Minn.

K-D Lamp Co., 108-10 W. Third St., Cincinnati, O.

Model Auto Lamp Co., 1101 W. Randolph St., Chicago, Ill.

Neverout—See Rose Mfg. Co.

Radio—See Dietz Co.

Rialto—See American Auto Lamp Co.

Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."

Sentinel—See Dietz Co.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (See page 257.)

Solar—See Hall Lamp Co.

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

Williams Mfg. Co., 121-25 W. 35th St., Los Angeles, Cal. (See page 525.)

HEADLIGHTS, ELECTRIC FOR FORDS—See Lamps, Electric Head

HEADLIGHTS, ELECTRIC TRACTOR—See Headlights, Tractor Electric

HEADLIGHTS, Tractor Acetylene

American Acetylene Stove Co., 504 Masonic Temple, Minneapolis, Minn.

Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."

Hall Lamp Co., C. M., Detroit, Mich. "Solar."

Indiana Lamp Co.—See Zinke Co.

Milburn Co., Alexander, 1420-28 W. Baltimore St., Baltimore, Md.

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 143-50 W. 52d St., New York, N. Y.

Victor—See Corcoran-Victor Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 770.)

HEADLIGHTS, Tractor Electric

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O. "Sun-Lite."

Hall Lamp Co., C. M., Detroit, Mich. "Solar."

Indiana Lamp Co.—See Zinke Co.

Solar—See Hall Lamp Co.

Sun-Lite—See Guide Motor Lamp Mfg. Co.

Williams Mfg. Co., 121-25 W. 35th St., Los Angeles, Cal. (See page 525.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 770.)

HEADS, Boring

Hofer Mfg. Co., Chicago & Jackson Sts., Freeport, Ill.

Marvin & Casler Co., 118 Roberts St., Canastota, N. Y.

HEADS, Special Cylinder, for Fords

Chevrolet Bros. Mfg. Co., Tenth & Lafayette Sts., Indianapolis, Ind. "Frontenac."

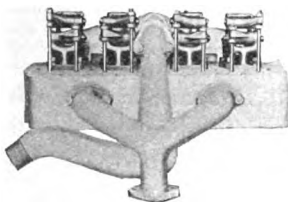
Craig-Hunt—See Speedway Engineering Co.

Frontenac—See Chevrolet Bros. Mfg. Co.

Green Engineering Co., Main St. & Burns Ave., Dayton, O.

Laurel Motors Corp., Anderson, Ind. "Roofs." (See page 453.)

Everything is listed under the NOUN or principal word



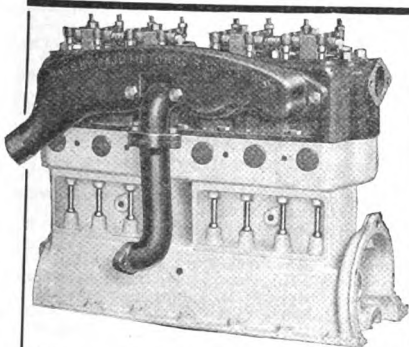
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25 to 40 miles on a gallon of gas, and a flexibility in "high" that practically eliminates use of "low," except in starting. Hot spot insures complete combustion, and minimized carbon. Larger water capacity insures proper cooling. Saving in fuel, alone, soon pays for head.

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Sao Paulo, Brazil
Lima, Peru
Santiago, Chile
Medellin, Colombia

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Manila
Mexico City
Shanghai, China

Canadian Distributors:
Canadian General Electric Company, Limited.

HEADS, Special Cylinder, for Fords (Continued)

Rajo Motor Co., 1363 Racine St., Racine, Wis. (See page 453.)
 Roofs—See Laurel Motors Corp.
 Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt." (See page 381.)
 Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.
 Wonder Motor Co., 149 Fell St., San Francisco, Cal.

HEAT DEFLECTORS FOR FORDS—See Deflectors, Heat

HEAT INDICATING METERS—See Meters, Water Temperature Indicating

HEAT TREATING—See Treating, Heat

HEAT SEALS, MOTOR—See Seals, Motor Heat

HEATED STEERING WHEELS—See Warmers, Hand

HEATERS, Automobile

(See also *Gloves, Electrically Heated; also Wheels, Heated Steering; for Electric Foot Warmers—See Warmers, Electric Foot*)

Acorn Motor Equipment Corp., 44 Penn St., Brooklyn, N. Y. "Hado." (See page 121.)
 Arvin Heater Co., 1625 Bellefontaine St., Indianapolis, Ind.
 Bovey Automobile Heater Co.—See Temme Spring Corp.
 Chicago Flexible Shaft Co., 5600 W. Roosevelt Rd., Chicago, Ill. "Clark."
 Clark—See Chicago Flexible Shaft Co.
 Francisco Auto Heater Co., 1016 Mt. Pleasant Ave., Columbus, O.
 Hadco—See Acorn Motor Equipment Corp.
 Hill, H. W., 10103 Prospect St., Chicago, Ill. "Utilizer."
 Hill Pump Valve Co.—See Zinke Co.
 Jonas, C. N. & F. W., 608 So. Dearborn St., Chicago, Ill. (Sales Representative for Noble Heater Co., Ft. Wayne, Ind.) (See page 138.)
 Joyce Auto Products Co., 2953 S. Michigan Ave., Chicago, Ill. "Superior."
 K. P. Products Co., 250 W. 54th St., New York, N. Y.
 K. & S. Auto Heater & Lock Co., 3357 S. Michigan Ave., Chicago, Ill. (See page 543.)
 Lehman Bros., 10 Bond St., New York, N. Y.
 Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radio."
 Noble Heater Co.—See Jonas, C. N. & F. W.
 Perfection Heater & Mfg. Co., 6556 Carnegie Ave., Cleveland, O.
 Radio—See Milwaukee Auto Specialty Mfg. Co.
 Sexco—See Sexton & Co.
 Sexton & Co., C. W., 31 W. Main St., Waynesboro, Pa. "Sexco."
 Superior—See Joyce Auto Products Co.
 Taplex Corp., 87 35th St., Brooklyn, N. Y.
 Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. (Also Sole Distributors for Bovey Automobile Heater Co., Chicago, Ill.) (See page 787.)
 Utility—See Zinke Co.
 Utilizer—See Hill, H. W.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 771.)

HEATERS, Automobile, for Fords

(Exhaust heaters; for heated steering wheels—See Warmers, Hand)

American Automatic Devices Co., Chicago, Ill. (See page 251.)
 Arvin Heater Co., 1625 Bellefontaine St., Indianapolis, Ind.
 Bridgeford—See Home Light Co.
 Detroit Auto Heater Co., 3917 Dix Ave., Detroit, Mich.
 Douglas Auto-Apppliance Co., 2845 Chicago Ave., Minneapolis, Minn.
 Dunham Co., Thos., Aurora, Ill. "Warm-ford." (See page 145.)
 Hill Pump Valve Co.—See Zinke Co.
 Home Light Co., 3353 Milwaukee Ave., Chicago, Ill. "Bridgeford."
 Joyce Auto Products Co., 2953 S. Michigan Ave., Chicago, Ill. "Superior."
 Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Warm-A-Ford."
 M & P—See Messenger & Parks Mfg. Co.
 Messenger & Parks Mfg Co., Aurora, Ill. "M & P."
 Perfection Heater & Mfg. Co., 6556 Carnegie Ave., Cleveland, O.
 Shotwell-Johnson, 712-22 Ontario Ave., N., Minneapolis, Minn.
 Superior—See Joyce Auto Products Co.
 Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. (See page 787.)
 Utility, Jr.—See Zinke Co.
 Warm-A-Ford—See Kokomo Electric Co.
 Warmford—See Dunham Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility Jr.") (See page 771.)

HEATERS, EXHAUST—See Heaters, Automobile

HEATERS, GARAGE—See Heaters, Special Garage

HEATERS, Glue

Advance Machinery Co., Van Wert, O. "Wetmore."
 Calorel—See National Electrical Supply Co.
 Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
 International Electric Co., 215-17 McCrea St., Indianapolis, Ind.
 National Electrical Supply Co., 1328-30 New York Ave., N. W., Washington, D. C. "Calorel."
 Oliver Machinery Co., 1025 Clancy St. N. E., Grand Rapids, Mich.
 Wetmore—See Advance Machinery Co.

HEATERS, Mixture

(For heating mixture in Carburetor or Manifold to facilitate starting)

Allison Burner Co., Pioneer Bldg., Seattle, Wash.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Maniheat."

Everything is listed under the NOUN or principal word

HEATERS, Mixture (Continued)

Arvin—See Indianapolis Air Pump Co.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. "Bailey." (See page 247.)
 Aske—See Kase Electric Co.
 Atlas Heater Co., 211 S. Meriden St., Wichita, Kans.
 B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill. "Thermotral."
 Bailey—See Asch and Co., Inc.
 Bear Mfg. Co., Rock Island, Ill. "Ever-Ready." (See page 405.)
 Briscoe Devices Co., 212 Osmun St., Pontiac, Mich. "Scoe."
 Colburn—See Kant-Miss Spark Plug Co.
 Comfy—See Hainert & Son.
 Crone, F. G., 281 W. Ferry St., Buffalo, N. Y.
 Electric Intake Heater Co., 117 E. Cortland St., Jackson, Mich.
 Ellis Car-Bur-Aid—See Motor Efficiency Corp.
 Ever-Ready—See Bear Mfg. Co.
 G. & G. Electric Heater Co., 219 N. Fourth St., Lafayette, Ind.
 Globe Machine & Stamping Co., Cleveland, O. "Sure-Start." (See page 155.)
 Great Western Commercial Body Co., Fourth & Pierce Sts., Omaha, Neb.
 Hainert & Son, F. H., 3043 Nicollet Ave., Minneapolis, Minn. "Comfy."
 Ieco—See Interstate Electric Co.
 Indianapolis Air Pump Co., 1625 Bellefontaine St., Indianapolis, Ind. "Arvin."
 Indus—See Industrial Electric Mfg. Co.
 Industrial Electric Mfg. Co., 139 Beaubien St., Detroit, Mich. "Indus."
 Interstate Electric Co., Baronne & Perdido Sts., New Orleans, La. "Ieco."
 Kant-Miss Spark Plug Co., Green Bay, Wis. "Colburn." (See page 649.)
 Kase Electric Co., Sherwood Bldg., Duluth, Minn. "Aske."
 Line—See Mechanical Utilities Corp.
 Lo-See—See Wee Specialty Co.
 Losee Motor Products Co., Hebron, Ill. "Protect-O-Motor." (See page 445.)
 Major Coil Protector Co., 370 Vinewood Ave., Detroit, Mich.
 Maniheat—See American Automobile Accessories Co.
 Mechanical Utilities Corp., 1348 N. Clark St., Chicago, Ill. "Line." (See page 401.)
 Motor Efficiency Corp., Real Estate Trust Bldg., Philadelphia, Pa. "Ellis Car-Bur-Aid."
 Nelson & Hammond, Cleveland, O. "Thurston."
 Perkins Appliance Co., 4 Birnie Ave., Springfield, Mass.
 Pomeroy Electric Co., 48 E. Main St., Rochester, N. Y. (See page 445.)
 Protect-O-Motor—See Losee Motor Products Co.
 Scoe—See Briscoe Devices Co.
 Staats & Co., Geo., 76 Bayard St., Brooklyn, N. Y. "Stallit."
 Stallit—See Staats & Co.
 Startit Mfg. Co., 1523-29 E. Washington St., Indianapolis, Ind. (See page 445.)
 Superheater Mfg. Co.—See Wee Specialty Co.
 Sure Start—See Globe Machine & Stamping Co.
 Thermotral—See B. K. F. Corp.
 Thurston—See Nelson & Hammond.
 Wee Specialty Co., 1806 Michigan Ave., Chicago, Ill. (Sole Distributors for Superheater Mfg. Co., Hebron, Ill. "Lo-See.")
 Wonder Carburetor Heater Co., Mason City, Ia.

HEATERS, Mixture, for Fords

(See also *Mixers, Fuel; also Primers, Engine; also Manifolds, Intake; For Kerosene Carburetors, See Carburetors, Kerosene*)

Ames Carburetor Co., 1612-14 Clark St., Racine, Wis.
 Arvin—See Indianapolis Air Pump Co.
 Aske—See Kase Electric Co.
 Axleford Truck Co., 7311 Crandon Ave., Chicago, Ill. "Red Spot."
 B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill. "Thermotral."
 Ben-Wat Corp., Jamesburg, N. J.
 Bruford Vaporizer Co., Bloomington, Ill.
 Bull Dog—See Reardon Co.
 Clark, H. D., 1569 N. Union Ave., Decatur, Ill.
 Dunn Mfg. Co., 115 N. 15th St., Clarinda, Ia.
 Gardner Auto Products Co., Detroit, Mich. (Sole Distributor for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 323.)
 Gardner Carburetor & Brass Works—See Gardner Auto Products.
 Hart-Lawrence Co., 501-10 Broome St., New York, N. Y. (See page 447.)
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. "Letts."
 Hot Spot Generator Co., 413 Cambridge St., Kansas City, Mo.
 Indianapolis Air Pump Co., 1625 Bellefontaine St., Indianapolis, Ind. "Arvin."
 Jiffy—See Twin Fire Spark Plug Co.
 K. H. K.—See Kay Co.
 Kase Electric Co., Sherwood Bldg., Duluth, Minn. "Aske."
 Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K."
 Letts—See Hill-Smith Metal Goods Co.
 Major Coil Protector Co., 370 Vinewood Ave., Detroit, Mich. "Quick-Start."
 Mechanical Utilities Corp., 1348 N. Clark St., Chicago, Ill. "Line." (See page 401.)
 Olsen—See United States Vaporizer Co.
 Perkins Appliance Co., 4 Birnie Ave., Springfield, Mass.
 Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 623.)
 Quick-Start—See Major Coil Protector Co.
 Quick-start—See Vic Dyk Co.
 Reardon Co., 209 State St., Peoria, Ill. "Bull Dog."
 Red Spot—See Axleford Truck Co.
 Startit Mfg. Co., 1523-29 E. Washington St., Indianapolis, Ind. (See page 445.)
 Taplex Corp., 87 35th St., Brooklyn, N. Y.
 Thermotral—See B. K. F. Corp.
 Twin Fire Spark Plug Co., 3964 W. Grand River Ave., Detroit, Mich. "Jiffy."
 United States Vaporizer Co., 216 State St., Boston, Mass. "Olsen."
 Vic Dyk Co., 3124 Iola Ave., Des Moines, Ia. "Quick-Start."

HEATERS, Radiator

(For keeping radiators from freezing in garage)

Calorel—See National Electrical Supply Co.
 Ceaco—See Cobb Electric Appliance Co.
 Cobb Electric Appliance Co., Laneville Terrace (Forest Hills), Boston, Mass. "Ceaco."
 Consolidated Car Heating Co., Singer Bldg., New York, N. Y.
 Edison Electric Appliance Co., 5680 W. Taylor St., Chicago, Ill. "Hughes."
 Faraday Co., 746 Chapel St., New Haven, Conn.
 Globe Machine & Stamping Co., Cleveland, O. (See page 155.)

Everything is listed under the NOUN or principal word

HEATERS, Radiator (Continued)

Hold-Heet—Mechanical Utilities Corp.
 Hughes—See Edison Electric Appliance Co.
 Knight Metal Products Co., 259 Willis Ave., E. Detroit, Mich. "Mayall."
 Line—See Mechanical Utilities Corp.
 Love—See Suburban Lighting Co.
 Majestic Electric Development Co., 656 Howard St., San Francisco, Calif.
 Mayall—See Knight Metal Products Co.
 Mechanical Utilities Corp., 1348 N. Clark St., Chicago, Ill. (Sole Distributors for Russell Electric Co., Chicago, Ill. "Hold-Heet.") (See page 401.)
 Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)
 National Electrical Supply Co., 1328-30 New York Ave., Washington, D. C. "Calorel."
 Neverout—See Rose Mfg. Co.
 Presto—See Metal Specialties Mfg. Co.
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa., "Neverout."
 Russell Electric Co.—See Mechanical Utilities Corp.
 Sharpe Electric Appliance Co., Murphy Bldg., Detroit, Mich.
 Suburban Lighting Co., Toledo, O. "Love."
 Taplex Corp., 87 35th St., Brooklyn, N. Y.

HEATERS, Radiators for Fords

Ceaco—See Cobb Electric Appliance Co.
 Cobb Electric Appliance Co., Lanesville Terrace, (Forest Hills) Boston, Mass. "Ceaco."
 Electric Machine Co., 329 W. Ohio St., Indianapolis, Ind. "Elmco."
 Elmco—See Electric Machine Co.
 Hold-Heet—See Mechanical Utilities Corp.
 Mechanical Utilities Corp., 1348 N. Clark St., Chicago, Ill. (Sole Distributors for Russell Electric Co., Chicago, Ill. "Hold-Heet.") (See page 401.)
 Russell Electric Co.—See Mechanical Utilities Corp.

HEATERS, Special Garage

Buckeye—See Thornton Co.
 Cleveland Heater Co., 1900 W. 112th St., Cleveland, O. "Rex."
 Cosy—See Superior Mfg. Co.
 Diamond Hardware Mfg. Co., 224 Fourth Ave., Pittsburgh, Pa.
 Economy—See Pittsburgh Casting & Heater Co.
 Eureka—See Lattner Mfg. Co.
 Fuller & Warren Co., River & Monroe Sts., Troy, N. Y. "Stewart."
 Globe Machine & Stamping Co., Cleveland, O. "Little Bachelor," (See page 155.)
 Honn, Peter, 629 Fairview Ave., Grand Rapids, Mich.
 Lattner Mfg. Co., P. M., 515 F Ave., W., Cedar Rapids, Ia. "Eureka."
 Little Bachelor—See Globe Machine & Stamping Co.
 Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn. "Sunbeam."
 O. K.—See Rippley Mfg. Co.
 Pittsburgh Casting & Heater Co., Scott Pl., Pittsburgh, Pa. "Economy."
 Rex—See Cleveland Heater Co.
 Richardson & Boynton, 260 Fifth Ave., New York, N. Y.
 Rippley Mfg. Co., Grafton, Ill. "O. K."
 Safety Heater Co., 378 Main St., East Orange, N. J.

Schleit Mfg. Co., W. A., Eastwood St., Syracuse, N. Y. "Wasco."
 Scientific Heater Co., 2104 Superior Viaduct, Cleveland, O.
 Sexco—See Sexton & Co.
 Sexton & Co., C. W., 81 W. Main St., Waynesboro, Pa. "Sexco."
 Stewart—See Fuller & Warren Co.
 Sunbeam—See Lombardi Motor Car Co.
 Superior Mfg. Co., Liverpool & Oxlins Sts., Pittsburgh (N. S.), Pa. "Cosy."
 Syraco—See Syracuse Radiator Co.
 Syracuse Radiator Co., Syracuse, N. Y. "Syraco." (See page 445.)
 Thornton Co., F. C., 6712 Union Ave., Cleveland, O. "Buckeye."
 Victory Oil Stove Co., 150 W. Austin Ave., Chicago, Ill.
 Wasco—See Schleit Mfg. Co.

HEATERS, STEERING WHEEL—See Warmers, Hand**HEEL PLATES—See Plates, Heel and Pedal****HEEL RESTS—See Rests, Heel****HIGH SPEED STEEL—See Steel, High Speed****HINGE FORMING MACHINES—See Machines, Hood Hinge Forming****HINGES, Cabinet**

(For Heel Boards, Boxes and Cabinets)

Keeler Brass Co., 361-71 Godfrey Ave., Grand Rapids, Mich.
 Sargent & Co., Water & Wallace Sts., New Haven, Conn.
 Stanley Works (Special Productions Dept.), New Britain, Conn. (See page 457.)

HINGES, Door

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
 Atwood Vacuum Machine Co., 130 N. Water St., Rockford, Ill.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 E. V. B. Mfg. Co., 342 York St., New Haven, Conn.
 Eberhard Mfg. Co., 2784 Tennyson Rd., Cleveland, O.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Gender, Paeschke & Frey Co., 1865-1700 St. Paul Ave., Milwaukee, Wis. (See page 843.)
 Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Ochaner & Sons Co., A., 1060 State St., New Haven, Conn.
 Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
 Presto—See Metal Specialties Mfg. Co.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Soes Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.
 Stanley Works (Special Productions Dept.), New Britain, Conn. (See page 457.)
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Ternstedt Mfg. Co., Detroit, Mich. (See back cover.)

Everything is listed under the NOUN or principal word



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HINGES, Door (Continued)

Wainwright & Son, W. W., 16th St. & Western Ave., Connersville, Ind.
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

HINGES, GARAGE DOOR—See Hangers and Hinges, Garage Door

HINGES, Hood

Auto Mounding & Mfg. Co., 1926-28 S. Wabash Ave., Chicago, Ill. "Autom."
Bronson Co., Homer D., Beacon Falls, Conn.
Seovill Mfg. Co., Waterbury, Conn. (See page 745.)
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.
Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

HINGES, Wind Shield

(For shields on closed cars)

Atwood Brass Works, Grand Rapids, Mich. (See page 147.)
Auto Brass Mfg. Co., 3514-20 S. Michigan Ave., Chicago, Ill.
Bremner & Terris Mfg. Co., 137-41 S. Albany Ave., Chicago, Ill. "J. & J."
Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
J. & J.—See Bremner & Terris Mfg. Co.

HITCHES, Automatic Disengaging Tractor

(A Hitch that automatically uncouples the plow from the tractor when the plow strikes an obstruction. For Tractor Couplers—See Couplers, Tractor; for ordinary Hitches—See Hitches, Tractor; for Quick Stop Hitches—See Hitches, Automatic Quick Stop Tractor)

Auto Welding Co., Hustisford, Wis. "Leitzke."
Greer Automobile Co., Erwin, 1521 Wabash Ave., Chicago, Ill.
Leitzke—See Auto Welding Co.
McKay—See Towers & Sullivan Mfg. Co.
Meadows Mfg. Co., 91 Bell St., Bloomington, Ill.
Parker Safety Hitch Co., Pittsburgh Bldg., St. Paul, Minn.
Protectometer Co., 4053 Ravenswood Ave., Chicago, Ill.
Safety Release Clevis Co., 149 W. Tenth St., Holland, Mich.
Towers & Sullivan Mfg. Co., E. Fourth St. & N. C. & St. L. Ry., Rome, Ga. "McKay."

HITCHES, Automatic Quick Stop Tractor

(A Hitch that automatically releases the tractor clutch when the plow strikes an obstruction. For Automatic Disengaging Hitches—See Hitches, Automatic Disengaging; for Tractor Couplers—See Couplers, Tractor; for ordinary Hitches—See Hitches, Tractor)

Melli Blumberg Co., New Holstein, Wis.
Taco—See Tractor Appliance Co.
Tractor Appliance Co., 210 Monroe St., New Holstein, Wis. "Taco."

HITCHES, Tractor

Ashley Automotive Corp., Balboa Bldg., San Francisco, Cal. "Doe."
Caswell Mfg. Co., Cherokee, Ia.
Cherokee Guide Co., Cherokee, Ia.
Doe—See Ashley Automotive Corp.
Dultmeier Mfg. Co., Manning, Ia. "Jiffey."
Ekern-Turk Mfg. Co., Pipestone, Minn.
Forsythe Mfg. Co., Third St. & Kentucky Ave., Joplin, Mo.
Hausmann Mfg. Co., Long Prairie, Minn.
Hughes & Curran Co., 45 Halstead St., Rochester, N. Y. "Motoline."
International Harvester Co. of America, Harvester Bldg., Chicago, Ill.
Jiffey—See Dultmeier Mfg. Co.
Motoline—See Hughes & Curran Co.

HITCHES, TRAILER—See Couplers, Trailer

HOBBIING MACHINES—See Machines, Gear Hobbing

HOISTS, BODY—See Hoists, Truck Body

HOISTS, CHAIN—See Blocks and Hoists, Chain

HOISTS, PORTABLE—See Cranes, Portable

HOISTS, Truck Body

(Power and Hand Hoists for Dumping Bodies.)

Archer Iron Works, 34th Pl. & Western Ave., Chicago, Ill. (See page 451.)
Auglaize Hoist & Body Co., New Bremen, O. "Peerless."
Auto Truck Service Co., 946-48 Third St., Milwaukee, Wis. "Giant." (See page 459.)
Auto Truck Steel Body Co., 3028-46 Carroll Ave., Chicago, Ill. "Dailey."
Berry Hydraulic Co., Erie, Pa. (See page 141.)
Brownhoist—See Brown Hoisting Machinery Co.
Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O. "Brownhoist."
Browning & Co., Victor R., 17701 Lake Shore Blvd., Cleveland, O.
Bruder, Lawrence, 211-13 W. Second St., Cincinnati, O. "Easy Dump."
Columbian Steel Tank Co., 1519-1025 W. 12th St., Kansas City, Mo. "Lightning." (See page 849.)
Dailey—See Auto Truck Steel Body Co.
Easy Dump—See Bruder, Lawrence.
Eureka—See Lally Commercial Body Co.
Giant—See Auto Truck Service Co.
Graves Co., L. C., Springboro, Pa.
Hell Co., 1130-40 Montana Ave., Milwaukee, Wis. "Hydro." (See page 459.)
Hough Mechanical Hoist Co., 1900 Southport Ave., Chicago, Ill.
Hummel Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for "Lightning" Hoists.) (See page 143.)
Hydraulic Hoist Mfg. Co., 292 Walnut St., St. Paul, Minn.
Hydro—See Hell Co.
Ideal—See Lally Commercial Body Co.
Jumbo Hydraulic Hoist Co., Chicago, Ill.
K & J—See Kilbourne & Jacobs Mfg. Co.
Kilbourne & Jacobs Mfg. Co., Columbus, O. "K. & J."

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The Modern Vehicle Co.,
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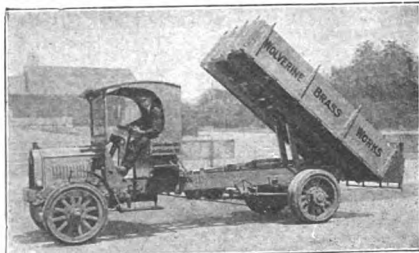
2035 Gratiot Avenue 3755 Wentworth Ave.

New York, N. Y. 721 E. 135th St.

Pittsburgh, Pa. 2723 Liberty Ave.

Philadelphia, Pa. 3428 N. 18th St.

St. Louis, Mo. 1112 N. 9th St.



Boston, Mass. 1335 Hyde Park Ave.
Minneapolis, Minn. University at Sixth Ave. S. E.

Please mention The Automobile Trade Directory

HOISTS, Truck Body (Continued)

King—See Patriot Motors Co.
 Lally Commercial Body Co., Paris St., Everett, Mass. "Ideal," "Eureka," "Metropolitan."
 Lightning—See Columbian Steel Tank Co.
 Monarch—See Standard Steel Works.
 Metropolitan—See Lally Commercial Body Co.
 Michigan Bridge & Pipe Co., Lansing, Mich.
 National Steel Products Co., 1611-21 Crystal Ave., Kansas City, Mo.
 Patriot Motors Co., Lincoln, Neb. "King."
 Peerless—See Auglaize Holst & Body Co.
 Perfection Holst & Engine Co., Milwaukee, Wis.
 Simpex Mfg. Co., Conneautville, Pa.
 Standard Steel Works, 1740 Tracy Ave., Kansas City, Mo. "Monarch."
 (See page 125.)
 Steffen-Van Steenwyk Co., 619 W. Seventh St., Sioux City, Iowa. "Woodbury."
 Van Dorn Iron Works Co., 2685 E. 79th St., Cleveland, O.
 Wood Hydraulic Holst & Body Co., 4100 Bellevue Ave., Detroit, Mich.
 (See page 459.)
 Woodbury—See Steffen-Van Steenwyk Co.
 Woonsocket Wagon Mfg. Co., 15 Warrall St., Woonsocket, R. I.

HOLD DOWN CLAMPS—See Clamps, Storage Battery Holding Down**HOLDERS, BARREL—See Holders, Oil Barrel and Can****HOLDERS, BELT, FOR FORDS — See Guides, Fan Belt****HOLDERS, Bouquet**

(For Limousines and other closed cars)

Aco—See Asch and Co., Inc.
 Art Metal Works, Aronson Sq., Newark, N. J. (See page 607.)
 Art Work Shop, 828-36 E. Ferry St., Buffalo, N. Y. (See page 327.)
 Asch & Co., Inc., 16-24 W. 61st St., New York, N. Y. "Aco." (See page 247.)
 English & Mersack Co., New Haven, Conn. (See page 539.)
 Hawkes & Co., T. G., Corning, N. Y.
 International Silver Co., Meriden, Conn.
 Liberty Works, Egg Harbor City, N. J. (See page 521.)
 Moswell Mfg. Co., 175 Grand St., New York, N. Y.
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
 (See page 459.)
 Thoma & Son, Fairfield, Iowa.
 Watson Co., 67 Mechanics St., Attleboro, Mass.

HOLDERS, BOW—See Holders, Top**HOLDERS, Clutch, for Fords**

A-E-S Mfg. Co., Oakville, Ia.
 Hughes & Curren Co., 45 Halstead St., Rochester, N. Y. "Motoline."
 Motoline—See Hughes & Curren Co.

HOLDERS, CRANK—See Holders, Starting Crank**HOLDERS, DOOR—See Holders, Garage Door****HOLDERS, EMBLEM—See Holders, Flag****HOLDERS, Flag, Pennant and Emblem**

(See also Flags, Pennants and Emblems)

America—See Rouse & Co.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3 A."
 Art Metal Works, Aronson Sq., Newark, N. J. (See page 607.)
 Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.
 Bon Tour Mfg. Co., Cobleskill, N. Y. "Grip-tite."
 Griptite—See Bon Tour Mfg. Co.
 Grillo—See Morris & Menkhaus Mfg. Co.
 H. K. Metal Products Co., 60 Grand St., New York, N. Y. "Liberty."
 Hudson Products Co., 44 E. 23d St., New York, N. Y.
 Kallgren, Geo. H., Iron Exchange Bldg., Minneapolis, Minn. "Safety First."
 Liberty—See H. K. Metal Products Co.
 Modern Tool & Stamping Co., 811-17 S. Clinton St., Chicago, Ill.
 Morris & Menkhaus Mfg. Co., 34 E. Court St., Cincinnati, O. "Grillo."
 Neverout—See Rose Mfg. Co.
 Richardson Ball Bearing Skate Co., 154 E. Erie St., Chicago, Ill.
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."
 Rouse & Co., H. B., 2214-16 Ward St., Chicago, Ill. "America."
 Safety First—See Kallgren, Geo. H.
 3 A—See American Automobile Accessories Co.
 Utilities Sales Association, 607 W. 43d St., New York, N. Y.

HOLDERS, Flag, Pennant and Emblem, for Fords

Morris & Menkhaus Mfg. Co., 34 E. Court St., Cincinnati, O. "Wonermer."
 Wonermer—See Morris & Menkhaus Mfg. Co.

HOLDERS, Garage Door

(For electric garage door openers—See Openers, Electric)

Griffin Mfg. Co., 15th & Cherry Sts., Erie, Pa.
 Lindberg Co., J. F., 501 N. La Salle St., Chicago, Ill.
 Miller & Son Co., Geo. B., Waterloo, Ia.
 National Mfg. Co., Sterling, Ill.
 Perkins—See Miller & Son Co.
 Phoenix Mfg. Co., Milwaukee, Wis.
 Reinhold-Sharp & Co., 623 Harrison St., Dan-enport, Ia.
 Richards-Wilcox Mfg. Co., Third St. & C. B. & I. R. R. Tracks, Aurora, Ill. "Slidetite."
 Rixson Co., Oscar C., 501 S. Jefferson St., Chicago, Ill.
 Shelby Spring Hinge Co., Shelby, O.
 Slidetite—See Richards-Wilcox Mfg. Co.
 Stanley Works (Special Production Dept.), New Britain, Conn.
 (See page 457.)

HOLDERS, GENERATOR — See Stands, Generator Holding

Everything is listed under the NOUN or principal word

HOLDERS, Lathe and Planer Tool

(See also Tools, Lathe & Planer)

- Agrappa—See Williams & Co.
 American Tool & Machine Co., 10 High St., Boston, Mass.
 Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill.
 (See page 885.)
 Bown Machine Co., Battle Creek, Mich.
 Carr—See Thompson & Son Co.
 Champion—See Western Tool & Mfg. Co.
 Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.
 Cogswell Mfg. Co., 85 Hall St., Springfield, Mass.
 Criban Machine & Steel Corp., 63 Duane St., New York, N. Y.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 O. K. Tool Holder Co., Shelton, Conn.
 Premier Machine Tool Works, 1031 Broadway, Albany, N. Y.
 Railway Specialty Co., Atchison, Kans.
 "Rysco."
 Ready Tool Co., 624 Iranistan Ave., Bridgeport, Conn.
 "Red-E."
 Red-E—See Ready Tool Co.
 Rysco—See Railway Specialty Co.
 Thompson & Son Co., Henry St., 277 Chapel St., New Haven, Conn.
 "Carr."
 Union Tool Co., 48 E. River St., Orange, Mass.
 Western Tool & Mfg. Co., Springfield, O.
 "Champion."
 Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y.
 "Agrappa."
 (See page 963.)

HOLDERS, License

- Accesso Mfg. Co., 99 State St., Boston, Mass.
 Alfa Specialty Co., 34 Southbridge St., Worcester, Mass.
 Auto License Holder Co., Middlebury, Vt.
 Auto Specialty Co., 174 Main St., Burlington, Vt.
 "Rite-In-Site."
 Automobile License Indicator Co., Lewisburg, Tenn.
 "Perfection," "Standard."
 Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal.
 Central Brass & Fixture Co., Segler & Hughes Bldg., Springfield, O.
 Clamert Mfg. Co., Latrobe, Pa.
 Cornelius-Browning Auto Co., 317-19 Jefferson Ave., Toledo, O.
 "Perfect."
 Dow Co., Louisville, Ky.
 (See page 157.)
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y.
 (See page 247.)
 Lambert Mfg. Co., Highland Bldg., Pittsburgh, Pa.
 (See page 463.)
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y.
 Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
 Neverout—See Rose Mfg. Co.
 Pennsylvania Pressed Steel Corp., Wayne Ave. & Berkley St., Philadelphia, Pa.
 "Yankee."
 Perfect—See Cornelius-Browning Auto Co.
 Perfection—See Automobile License Indicator Co.
 Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill.
 Rite-In-Site—See Auto Specialty Co.
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa.
 "Neverout."
 Stanford Auto Lamp & Number Co., 1475 Michigan Ave., Chicago, Ill.

- Standard—See Automobile License Indicator Co.
 Utility Mfg. & Sales Corp., 262-80 Dover St., Boston, Mass.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J.
 (See page 174.)
 Yankee—See Pennsylvania Pressed Steel Corp.

HOLDERS, License, for Fords

(Holders or carriers for license plate for front of car)

- Alfa Specialty Co., 34 Southbridge St., Worcester, Mass.
 American Mantle Co., Anderson, Ind.
 Apro Mfg. Co., 703 Eddy St., Providence, R. I.
 Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
 BB—See Bayne Mfg. Co.
 Badger Mfg. Corp., Milwaukee, Wis.
 (See page 171.)
 Bayne Mfg. Co., Bushnell, Ill.
 "BB."
 (See page 149.)
 Boyd, C. C., Pulaski, Pa.
 "Little Giant."
 Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Dotti Mfg. Co., 128 S. Pinckney St., Madison, Wis.
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Fracto Inc., 161 Massachusetts Ave., Boston, Mass.
 Goodrich-Lenhart Mfg. Co., Hamburg, Pa.
 (See page 933.)
 Hastings Mfg. Co., 36 E. Mill St., Hastings, Neb.
 (See page 521.)
 Humboldt—See Republic Auto Parts Co.
 Jofer—See Peoria Sheet Metal Works.
 Lambert Mfg. Co., Highland Bldg., Pittsburgh, Pa.
 (See page 463.)
 Little Giant—See Boyd, C. C.
 Metal Specialties Co., Attleboro, Mass.
 Midway Mechanical Co., St. Paul, Minn.
 Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
 Morris & Menckhaus Mfg. Co., 34 E. Court St., Cincinnati, O.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Neverout—See Rose Mfg. Co.
 Onaka Co., Indianapolis, Ind.
 (See page 369.)
 Pennsylvania Pressed Steel Corp., Wayne Ave. & Berkley Sts., Philadelphia, Pa.
 "Yankee."
 Peoria Sheet Metal Works, 3026 S. Adams St., Peoria, Ill.
 "Jofer."
 Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill.
 Randt Sales Corp., Dept. A., Grand Rapids, Mich.
 (See page 811.)
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.
 "Sterling."
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa.
 "Neverout."
 Sterling—See Republic Auto Parts Co.
 W-A—See Whetstone & Co.
 Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill.
 Whetstone & Co., John H., Court St., Lapeer, Mich.
 "W-A."
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J.
 (See page 174.)
 Worthington, A. P., 700 N. Main St., Los Angeles, Cal.
 Yankee—See Pennsylvania Pressed Steel Corp.

HOLDERS, LUGGAGE—See Holders, Suit Case

Everything is listed under the NOUN or principal word

HOLDERS, Magneto Plug for Fords

Stout's Mfg. Co., Lockport, N. Y.

HOLDERS, Oil Barrel and Can

(For holding either round or square oil cans in garage so arranged that the can may be readily tipped and oil poured from it without lifting it)

Halladay Co., L. P., Decatur, Ill.
(See page 171.)

HOLDERS, Oil Can

(For carrying oil cans or others on car)

Becco—See Michigan Motor Specialties Co.
Buffum Tool Co., Louisiana, Mo.
(See page 883.)

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 540.)

Halladay Co., L. P., Decatur, Ill. "Reliable." (See page 171.)

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. "Security."
(See page 251.)

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

Reliable—See Halladay Co.

Security—See Mayo-Skinner Mfg. Co.

Spiro Mfg. Co., C. 62-72 E. 131st St., New York, N. Y. "Uniq."

Uniq—See Spiro Mfg. Co.

HOLDERS, PENNANT—See Holders, Flag

HOLDERS, PLANER TOOL—See Holders, Lathe and Planer Tool

HOLDERS, Spare Wheel, for Fords

Better—See New Era Spring & Specialty Co.
Biltwell Accessories Co., 401 E. 23rd St., New York, N. Y.

New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Better."

Simplex Wire Wheel Co., Cadillac, Mich.
(See page 945.)

HOLDERS, Starting Crank

(Leather strap and holder to prevent starting crank swinging or dropping down)

Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal.

Bantlin Co., Julius J., Cincinnati, O.

Bemco—See B. E. Mfg. Co.

Boston Leather Specialties Co., 30 Merrimac St., Boston, Mass.

Calsco—See Chicago Auto Leather Specialty Co.

Campbell—See Perkins-Campbell Co.

Carter Co., George R., Connorsville, Ind.

Chicago Auto Leather Specialty Co., 6637 S. Halsted St., Chicago, Ill. "Calsco."

Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Economy Stay Co., Jefferson City, Mo.
Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Holders.)
(See page 113.)

Fesser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."

Fernald Mfg. Co., North East, Pa. "Jiffy."
(See page 75.)

Fitzwell—See Niagara Fabric Mfg. Co.

G & K—See Graton & Knight Mfg. Co.

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)

Hager & Son, Chas., 1936 Broadway, New York, N. Y.

Hide, Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind.

Jiffy—See Fernald Mfg. Co.

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y.
(See page 165.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Rose Mfg. Co., Frank, Hastings, Neb.
(See page 675.)

Specialty Harness Co., Dayton, Va.

Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.

Superior—See Fesser Co.

Williamsport Leather Goods Co., 944 Nichols Pl., Williamsport, Pa. "Wesco."

Wesco—See Williamsport Leather Co.

HOLDERS, Starting Crank, for Fords

(Metal, leather or fabric holder for keeping starting crank up out of mud and dirt and also to prevent rattling)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)

Bemco—See B. E. Mfg. Co.

Boston Leather Specialties, 30 Merrimac St., Boston, Mass.

Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Holders.)
(See page 113.)

G. & K.—See Graton & Knight Mfg. Co.

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)

King Mfg. Co., 206 Washington St., Brookline, Mass.

King Pressed Steel & Mfg. Co., Boston, Mass.

Oakes Co., Indianapolis, Ind.

(See page 369.)

Perkins-Campbell Co., Cincinnati, O.
(See page 299.)

Rose Mfg. Co., Frank, Hastings, Neb.
(See page 675.)

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

HOLDERS, Suit Case or Luggage

(For attaching to running board)

Ajax Trunk & Sample Case Co., 420 W. 125th St., New York, N. Y.

Allied Steel Products Co., 7 Walnut St., Aurora, Ill.

Everything is listed under the NOUN or principal word

LAMBERT

**License
Plate
Holder**



**A Distinctive—One Piece
Boltless Holder**

Simplicity is the basis of this holder. Can be put on or taken off entirely by hand. For the average motorist it does away with rusty bolts and bothersome noises. This holder will fit almost every standard make of car. Just slip holder through slot in plate, then through slot in bracket—give quarter turn and your license plate is on to stay. Absolutely locked until you reverse the operation to take it off.

These holders are mounted on an attractive counter display card having 25 pairs on each card that retail at \$60 a pair or \$12.50 list price a card.

We would be very glad to ship you a card through your jobber. Just send us the order and mention your jobber's name. Sample pair by mail for 35c.

LAMBERT MANUFACTURING CO.
Highland Building Pittsburgh, Pa.

THE IDEAL LUGGAGE CARRIER**Sells on Sight!**

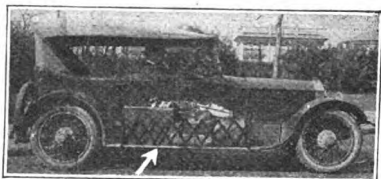
Puts Passengers and Luggage each in their proper place—the luggage safe, out of the way, yet always in easy reach.

This all-steel, folding and adjustable carrier can be attached or removed without tools. Fits all running boards and extends from 6 to 66 inches. Height 16 inches. Can be carried in tool box when not in use.



Write for Prices and Territory

WILLIAM SCHWENN IRON WORKS
822-832 Lexington Avenue, Brooklyn, N. Y.

**BAIR**

Bow Separating Top Holders

Malleable Iron Castings

Automobile Jacks

Body Irons & Fittings

Malleable Iron

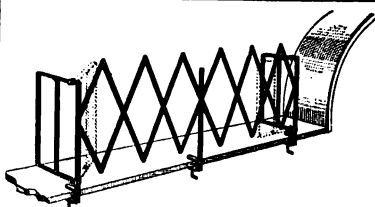
Motor Car Parts

Manufactured by

Auto Specialties Manufacturing Co.
St. Joseph, Michigan

CANADIAN PLANT

Auto Specialties Mfg. Co. of Canada
Windsor, Ontario



PAT. NO. 1304502, MAY 20, 1919

THE KITTLE
COLLAPSIBLE AUTO
LUGGAGE CARRIER

Over 60,000 Sold Last Year

MATERIAL—

Upright standards— $\frac{3}{4}$ "x $\frac{3}{4}$ "x $\frac{1}{2}$ " Channel Iron
Cross Bars— $\frac{3}{4}$ "x $\frac{1}{2}$ " Steel Bars
Fender Clamps— $\frac{1}{2}$ "x $\frac{1}{2}$ " Steel Bars

Size WILL FIT ALL CARS
Height—17" above running board
Folded— $7\frac{1}{2}$ "x22"
Weight—13 lbs. packed
Finish—Hard baked black enamel

KITTLE MFG. CO.

Chicago Los Angeles
2721 S. Michigan Av. 641 Santa Fe Av.

HOLDERS, Suit Case or Luggage (Continued)

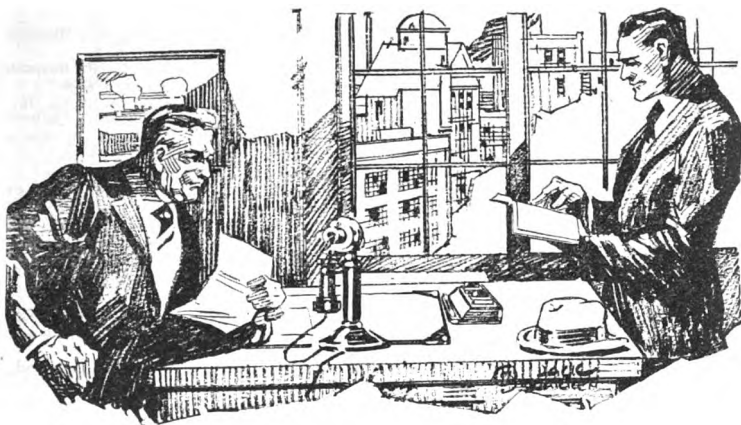
- Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
- Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
- Asch & Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Halladay Holders.) (See page 247.)
- Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.
- Auto Luggage Carrier Co., S. Park St., Adams, N. Y.
- Badger Mfg. Corp., Milwaukee, Wis. "Handy." (See page 171.)
- Bersted Mfg. Co., 765 Mather St., Chicago, Ill. "Kompak."
- Blake Mfg. Co., South Bend, Ind. "Clamplock."
- Boyle Mfg. Co., 21 Sutter St., Los Angeles, Cal. "E-Z," "Sure-Grip." (See page 183.)
- Brace-Rite—See Master Products Co.
- Brinck Mfg. Co., Fifth Ave. & 24th St., Moline, Ill. (See page 931.)
- Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
- Brown Stamping Co., Toledo, O.
- Buffington & Co., C. A., Berkshire, N. Y.
- Bulldog Luggage Guard Co., 13 Concord St., Nashua, N. H.
- Chicago Tool & Kit Mfg. Co., 12 N. Market St., Chicago, Ill. "Out-O-Site."
- Clamplock—See Blake Mfg. Co.
- Dependable—See Pioneer Automotive Co.
- E-Z—See Boyle Mfg. Co.
- Ebern-Turk Mfg. Co., Pipestone, Minn.
- Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.
- Ford Co., M. A., 110 Harrison St., Davenport, Iowa. "Paksnug."
- Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. (See page 167.)
- Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
- Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. "Sturdy." (See page 265.)
- Grip-Tite Holder Co., Norwich, N. Y.
- Halladay Co., L. P., Decatur, Ill. (See page 171.)
- Handy—See Badger Mfg. Corp.
- Hasco Mfg. Co., 1527 Wazee St., Denver, Colo.
- Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Loxtite Holders.) (See page 179.)
- Ideal—See Schwenn Iron Works.
- Interlock Hardware Co., 342-48 York St., New Haven, Conn.
- Jay & Dee Specialty Co., 41 Park Row, New York, N. Y.
- Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Distributors East of the Mississippi River for Standley Adjusters.) (See page 138 B.)
- Kittie Mfg. Co., 641 Sante Fe Ave., Los Angeles, Cal. (See page 463.)
- Auto Pak—See Kittie Mfg. Co.
- Kompak—See Bersted Mfg. Co.
- Loxite Carrier Co., 316 Main St., Niagara Falls, N. Y.
- Lug-Rac—See Park Metalware Co.
- Marforco—See Market Forge Co.
- Market Forge Co., Garvey St. & Boulevard, Everett, Mass. "Marforco."
- Marquette Mfg. Co., 218 S. Wabash St., St. Paul, Minn.
- Marvel Clamp Co., 76 First St., San Francisco, Cal.
- Master Products Co., 1142 Belmont Ave., Chicago, Ill. "Brace-Rite."
- Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
- Metal Products Mfg. Co. of New Jersey—See Pioneer Automotive Co.
- Mill City Co., Minneapolis, Minn.
- Out-O-Site—See Chicago Tool & Kit Mfg. Co.
- National Carrier Co., 707 Second Ave., S. Minneapolis, Minn.
- Paksnug—See Ford Co.
- Pandolfo Mfg. Co., St. Cloud, Minn.
- Park Metalware Co., Lewis Blk., Buffalo, N. Y. "Lug-Rac."
- Pioneer Automotive Co., 245 W. 55th St., New York, N. Y. (Sole Representatives for Metal Products Mfg. Co. of New Jersey, Sewaren, N. J. "Dependable.")
- Rust Mfg. Co., Marshalltown, Iowa.
- Schwenn Iron Works, William, 822-32 Lexington Ave., Brooklyn, N. Y. "Ideal." (See page 463.)
- Standley Skid Chain Co., Boone, Ia. (See page 138 B.)
- Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 750.)
- Sturdy—See Gray-Hofman Co.
- Sure Grip—See Boyle Mfg. Co.
- Tourist Auto Equipment Co., Dahlgren, Ill.
- Vikry Sales Co., 380 Fifth St., Milwaukee, Wis. (See page 239.)
- World Metal Products Corp., 8778 111th St., Richmond Hill, N. Y.
- Z & K Mfg. Co., 22 Custom House St., Boston, Mass.

HOLDERS, Tire

(For carrying spare tires on cars, including Demountable Discs)

- Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Victor," "Duplex," "Simplex" and "2-R-3" Holders.) (See page 247.)
- B. & A. Machine Co., 66 Broad St., New York, N. Y. "Spook American."
- Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
- Bell, Stuart, 301 W. 53rd St., New York, N. Y. "Letmont."
- Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
- Clayton Co., 136 W. 52d St., New York, N. Y. "Hoover."
- Climax—See Strifler & Shannon.
- Detroit Carrier & Mfg. Co., Detroit, Mich. (See page 973.)
- Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
- Duplex—See International Stamping Co.
- Easyway—See Lawrence Mfg. Co.
- Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
- Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber."
- Erp—See Sedgwick Sales Co.
- Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. (See page 167.)

Everything is listed under the NOUN or principal word



—and another dealer signed the contract

"Here, Charley," said the Blank Automobile Company's sales manager, "is a letter from a concern in Jonesville about taking on our line. The question is what sort of people are they? Are they in position to do our proposition justice? Can they give the service on which we insist? Will it be worth while to let Williams hurry out there to see them?"

A few moments later the manager's assistant returned and said: "They are the biggest dealers in Jonesville. They now handle the Green Six and the Eagle Four. They operate a garage and machine shop, have a supply department and sell and repair tires."

"That ought to qualify them," said the manager. "Time counts these days—tell Williams to hop on the next train and see them."

That's how, next day, another dealer signed the agency contract.

Now how did the assistant size up the prospect so quickly and accurately? By consulting The Automobile Trade Directory's Mailing List, the shortest of all short-cuts to time and money-saving information, the Who is Who of the Industry, which should be at the elbow of every motor car sales manager.

By reflecting the scope of the dealer's business activities, the A. T. D. Mailing List Service makes it possible for the sales executive to judge his prospects' enterprise and availability. Yet this is only one of the Mailing List's many valuable uses which we shall gladly explain to interested correspondents.

The Automobile Trade Directory

239 West 39th Street NEW YORK

Please mention The Automobile Trade Directory

HOLDERS, Tire (Continued)

Halladay Co., L. P., Decatur, Ill.
(See page 171.)

Hamilton Caster & Mfg. Co., Hamilton, O., (See page 477.)

Hoover—See Clayton Co.

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.

Ideal—See Letmont Spare Tire Carrier Co.

Interlock Hardware Co., 342-48 York St., New Haven, Conn.

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. "Victor," "Duplex," "Simplex," "2-R-3." (See page 467.)

Lawrence Mfg. Co., F. K., 20 E. Lake St., Chicago, Ill. "Easyway." (See page 963.)

Letmont—See Bell, Stuart.

New Era Spring & Specialty Co., 51-55 Cottage Grove Ave. S. W., Grand Rapids, Mich. "Sly Perfect."

Oakes Co., Indianapolis, Ind. (See page 369.)

Pennsylvania Pressed Steel Corp., Wayne Ave. & Berkeley St., Philadelphia, Pa. "Yankee."

Sedgwick Sales Co., 1405 Sedgwick Ave., New York, N. Y. "Erp." (See page 467.)

Simplex—See International Stamping Co.

Sly Perfect—See New Era Spring & Specialty Co.

Spook American—See B. & A. Machine Co.

Strifer & Shannon, 949-51 S. Flower St., Los Angeles, Cal. "Climax."

Taber—See Emco Mfg. Co.

2-R-3—See International Stamping Co.

Trex—See Trexler Co.

Trexler Co., 1418 Walnut St., Philadelphia, Pa. (Sole Distributors for Twinlock Co., Philadelphia, Pa. "Trex.") (See page 467.)

Twinlock Co.—See Trexler Co.

Victor—See International Stamping Co.

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

Yankee—See Pennsylvania Pressed Steel Corp.

HOLDERS, Tire, for Fords

(For carrying spare tires on cars, including demountable rim and wheel carriers)

American Metal Parts Mfg. Co., Milwaukee, Wis.

Asch and Co., Inc., 10-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Simplex," "2-R-3," and "Duplex" Holders.) (See page 247.)

Auto Forge Sales Co., 80 King Ave., Columbus, O. "Universal."

Autoguard—See Stewart-Warner Speedometer Corp.

B. & A. Machine Co., 203 W. 75th St., New York, N. Y. "Spook."

Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)

Billwell Accessories Co., 401 E. 23rd St., New York, N. Y.

Crescent Mfg. Co., 120 Rende St., New York, N. Y. (See page 673.)

Dow Co., Louisville, Ky. (See page 157.)

Duplex—See International Stamping Co.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Emco Mfg. Co., 4 Griswold St., Binghamton, N. Y. "Taber."

Ferris Auto-Carrier Co., 29 S. Seventh St., Philadelphia, Pa. "Quick-Action."

Fox Automotive Products Corp., A. H., 4700 N. 18th St., Philadelphia, Pa. "Liberty."

Gahm-McCormick Co., 806 E. Main St., Streator, Ill. (See page 171.)

Gem City—See Meeker Mfg. Co.

Globe Machine & Stamping Co., Cleveland, O. "Lockfast." (See page 155.)

Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. "Sturdy." (See page 265.)

Halladay Co., L. P., Decatur, Ill. (See page 171.)

Hasco—See Howard Auto Specialties Co.

Hastings Mfg. Co., 30 E. Mill St., Hastings, Mich. (See page 521.)

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal.

Horrocks Iron Works, 234 N. Broad St., Philadelphia, Pa. "Liberty."

Howard Auto Specialties Co., Swampscott, Mass. "Hasco."

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. "Duplex," "Simplex," "2-R-3." (See page 467.)

Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.

Korect—See New Era Spring & Specialty Co.

Lane Bros. Mfg. Co., Shelburne, Ind.

Liberty—See Fox Automotive Products Corp.

Liberty—See Horrocks Iron Works.

Lockfast—See Globe Machine & Stamping Co.

Lyon—See Metal Stamping Co.

McKinnon Dash Co., Buffalo, N. Y. (See page 686.)

Meeker Mfg. Co., Linden & Huffman Aves., Dayton Co. "Gem City."

Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. "Lyon." (See page 168.)

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

New Era Spring & Specialty Co., 51-55 Cottage Grove St. S. W., Grand Rapids, Mich. "Sly," "Korect," "Perfection."

Ospeco—See Michigan Auto Products Co.

Pennsylvania Pressed Steel Corp., Wayne Ave. & Berkeley St., Philadelphia, Pa. "Yankee."

Perfection—See New Era Spring & Specialty Co.

Quick-Action—See Ferris Auto-Carrier Co.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."

Simplex—See International Stamping Co.

Sly—See New Era Spring & Specialty Co.

Sly Mfg. Co., W. W., Cleveland, O.

Spook—See B. & A. Machine Co.

Standard Motor Parts Co., 1420 S. Michigan Ave., Chicago, Ill. (Sole distributors for Packer Auto Specialty Co., Chicago, Ill.) "Ray."

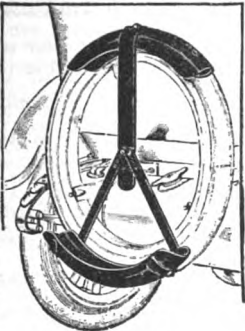
Sterling—See Republic Auto Parts Co.

Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill.

Stewart-Warner Speedometer Corp., Chicago, Ill. "Autoguard." (See page 589.)

Everything is listed under the NOUN or principal word

Fits over any rear tire
Carries as many extra tires as desired



Patented
Sept. 18, 1917, Jan. 27, 1920, Aug. 10, 1920

2-R-3 Adjustable Tire Carriers

The second extra tire is supported by the first, the third by the second, etc. Strap all together on both sides. Write for further particulars; our full line will interest you.

The International Stamping Co.

400 N. Leavitt Street Chicago, Ill., U. S. A.

TREX

Twinlock
Tire
Carrier

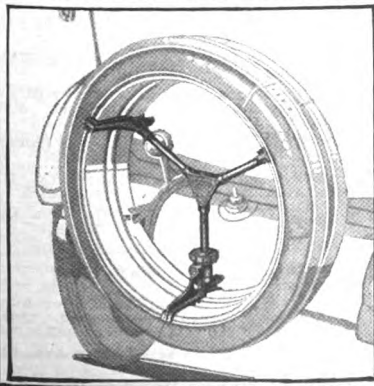
Carries Two Tires
Makes Them Theftproof

Underwriters
Laboratories Inspected

REDUCES INSURANCE

The Trex Twinlock Tire Carrier attaches to any circular single carrier. It carries two tires, guarding both against theft. It is an innovative device that every motorist wants.

THE TREXLER CO., 1418 Walnut St., Philadelphia



The circle illustrates one of the three units installed ready to carry a second spare.

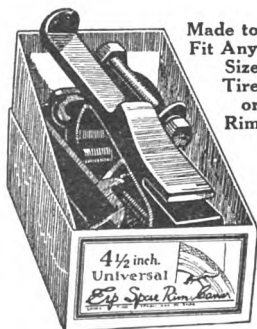


**An Extra
Spare Tire
Carrier That
Sells on Sight**

Every car owner who sees an Erp Spare Rim Carrier wants a set. The bolt and nut construction is so simple that all you need is a wrench to install it on the rim of the first spare. Both tires can be removed without detaching carrier. Eliminates straps, rattle and chafing. Most good jobbers stock it.

Retails
For
\$3.50
A Set
Complete.

\$4.00
West of
The
Rockies.



Made to
Fit Any
Size
Tire
or
Rim

SEDGWICK SALES COMPANY
1405 Sedgwick Ave., New York City

Erp Spare Rim Carrier
CARRY TWO SPARES AND BE SAFE

Please mention The Automobile Trade Directory

HOLDERS, Tire, for Fords (Continued)

Sturdy—See Gray-Hofman Co.

Taber—See Emco Mfg. Co.

2-R-3—See International Stamping Co.

Universal—See Auto Forge Sales Co.

Vantage—See Victor Steel Stamping Co.

Victor Steel Stamping Co., 3103 Downing St., Denver, Colo. "Vantage."

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

Yankee—See Pennsylvania Pressed Steel Corp.

HOLDERS, TOOL—See Holders, Lathe and Planer Tool

HOLDERS, Top

(For holding or clamping tops securely when in folded or down position; See also Straps, Leather)

Adams—See Rock Island Mfg. Co.
Auto Specialties Mfg. Co., St. Joseph, Mich. "Blair." (See page 403.)

Blair—See Auto Specialties Mfg. Co.
Rock Island Mfg. Co., Rock Island, Ill. "Adams." (See page 925.)

Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (See page 893.)

Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.

HOLDERS, TOP FOR FORDS—See Clamps, Top Bow

HOLDERS, Tractor Clutch

Standard Farm Implement Co., 110 W. Tenth St., Des Moines, Iowa.

Wehr Co., 533 30th St., Milwaukee, Wis. (See page 505.)

HOLDERS, Transmission Drum for Fords

(Holder or Stocks with handles to clamp on drum so that it may be easily turned when reaming bearing bushing with stationary reamer. For Bench Clamps or Vises for Transmission Drums—See Clamps or Vises, Transmission Drum for Fords)

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

HOLDERS, Watch

(See also Clocks, Dashboard)

Ajax—See Newark Watch Case Material Co.
Bryan's Department Store, Staunton, Va. "Time Clutch."

Burleigh, Geo. K., Penacook, N. H.
Cowles & Co., C., New Haven, Conn. (See page 451.)

Economic—See Jay & Dee Specialty Co.

Jay & Dee Specialty Co., 41 Park Row, New York, N. Y. "Economic."

Newark Watch Case Material Co., 15-19 Ward St., Newark, N. J. "Ajax."

Newton Mfg. Co., Plainville, Conn. (See page 315.)

Nojar—See Pennsylvania Rubber Co.

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Pennsylvania Rubber Co. of America, Jeannette, Pa. "Nojar."

Time Clutch—See Bryan's Department Store.

HOLDERS, Watch, for Fords

(See also Clocks, Steering Wheel)

Neverout—See Rose Mfg. Co.

Newton Mfg. Co., Plainville, Conn. (See page 315.)

Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."

HOLDING STANDS, GENERATOR—See Stands, Generator Holding

HOOD CLAMPS FOR FORDS—See Clamps, Hood

HOOD COVERS—See Covers, Radiator

HOOD FASTENERS FOR FORDS—See Clamps, Hood

HOOD FORMING MACHINES—See Machines, Hood Hinge Forming

HOOD HINGES—See Hinges, Hood

HOOD LACING—See Lacing, Fabric Radiator; also Leather, Rawhide Lace

HOOD LATCHES—See Fasteners, Hood

HOOD SUPPORTS—See Supports, Hood

HOOD VENTILATOR FORMING MACHINES—See Machines, Louvre Forming

HOODS, Engine

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill.

Automotive Sheet Metal Co., Factory St. and Grand Trunk R. R., Kalamazoo, Mich. "Maco."

Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.

Brummeler-Ruggles Metal Products Co., 1215 Ionla Ave., S. W., Grand Rapids, Mich.

Brummeler's Sons Co., Wm., 413 Ionla Ave., S. W., Grand Rapids, Mich. "Brusco."

Brusco—See Brummeler's Sons Co., Wm.

Bush Mfg. Co., Hartford, Conn. (See page 683.)

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)

Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.

Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 471.)

Everything is listed under the NOUN or principal word

HOODS, Engine (Continued)

Columbus Auto Brass Co., Columbus, O.
(See page 381.)
Cerrawall Mfg. Co., Cleveland, O.
(See page 345.)
Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.
Dunham Co., Thos., Aurora, Ill.
(See page 145.)
Field Body Corp., Owosso, Mich.
Fostoria Pressed Steel Co., Fostoria, O.
(See page 377.)
Gender, Paescke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis.
(See page 343.)
Hayes Mfg. Co., 4535 Maybury Grand Ave., Detroit, Mich.
Hersh & Bro., 657 Mill St., Allentown, Pa.
Jackson Metal Products Co., 601-15 Liberty St., Jackson, Mich.
Johnson's Automobile Sheet Metal Works, W. N., 630-28 South J St., Richmond, Ind.
Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
Lawco—See Lawson Co.
Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawco." (See page 377.)
Lima Sheet Metal Products Co., 308 E. Wayne St., Lima, O. "Limaco."
Limaco—See Lima Sheet Metal Products Co.
M & P—See Messenger & Parks Mfg. Co.
Maco—See Automotive Sheet Metal Co.
Messenger & Parks Mfg. Co., Aurora, Ill. "M & P."
Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
Michigan Stamping Co., 11681 Mack Ave., Detroit, Mich.
Moline Pressed Steel Co., Fifth St., East Moline, Ill.
Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
Murray Auto Parts Mfg. Co., Atlanta, Ga.
Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
Pandolfo Mfg. Co., St. Cloud, Minn.
Paragon Auto-Parts Mfg. Co., 506 W. 52d St., New York, N. Y.
Perfex Radiator Co., Racine, Wis.
Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.
S.-J.—See Shotwell-Johnson.
Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.
Sargeant Mfg. Co., New & Summit Sts., Newark, N. J.
Shotwell-Johnson, 712-22 Ontario Ave., N., Minneapolis, Minn. "S.-J."
Todd Mfg. Co., 13-14 N. 12th St., Minneapolis, Minn.
Wemsco—See Western Metal Specialty Co.
Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemsco."
Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.
York Corrugating Co., York, Pa.
(See page 377.)

HOODS, Engine, for Fords

(Including both standard and stream line hoods)
A. R. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.

Candler Radiator Co., 1084-86 Jefferson Ave. E., Detroit, Mich. (See page 687.)
Dunham Co., Thos., Aurora, Ill.
(See page 145.)
Empire Auto Specialty Co., 1426 Blue Island Ave., Chicago, Ill.
Field Body Corp., Owosso, Mich.
Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
Lawco—See Michigan Auto Products Co.
Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawco." (See page 377.)
Livingston Radiator Corp., 718 N. Front St., Plainfield, N. J. "Rolsford."
Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Lawco."
Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
Pandolfo Mfg. Co., St. Cloud, Minn.
Rolsford—See Livingston Radiator Corp.
Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

HOODS, MOTOR—See Hoods, Engine

HOODS, Radiator, for Fords

(Pressed or stamped hoods or covers to apply over radiator to give a V or stream line appearance)

Columbia Auto Radiator Co., 903-06 Race St., Cincinnati, O.
Corcoran Mfg. Co., Section & Foraker Aves. (Norwood), Cincinnati, O. "Peerless."
Dunham Co., Thos., Aurora, Ill.
(See page 145.)
Empire Auto Specialty Co., 1426 Blue Island Ave., Chicago, Ill.
Field Body Corp., Owosso, Mich.
Lawco—See Michigan Auto Products Co.
Lawco—See Lawson Co.
Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawco." (See page 377.)
M. & P.—See Messenger & Parks Mfg. Co.
Messenger & Parks Mfg. Co., Aurora, Ill. "M. & P."
Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Lawco."
Monarch Radiator & Fender Works, 632-38 Ellis St., San Francisco, Cal.
Peerless—See Corcoran Mfg. Co.
Superfect—See Superior Lamp Mfg. Co.
Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y. "Superfect."

HOODS, Tractor

Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.
Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.
Derby Coppersmithing & Sheet Metal Contracting Co., First & Caroline Sts., Derby, Conn.
Dunham Co., Thos., Aurora, Ill.
(See page 145.)
Field Body Corp., Owosso, Mich.
Hersh & Bro., 657 Mill St., Allentown, Pa.
Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
Moore Mfg. Co., Concrete & Water Sts., Waterloo, Ia.
York Corrugating Co., York, Pa.
(See page 377.)

HOOKS, ENGINE LIFT FOR FORDS—See Tongs, Engine Lift

HOOKS, MUD—See Chains or Grips, Non-Skid

Everything is listed under the NOUN or principal word

HOOKS, Safety Tow

Ideal—See Reinhold Co.

Reinhold Co., John J., Marietta, Pa. "Ideal."

HOOKS, Snap

Anchor—See North & Judd Mfg. Co.

Covert Mfg. Co., Troy, N. Y.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

Standard Metal Mfg. Co., 287 Chestnut St., Newark, N. J.

Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.

HOOKS, TIRE CHAIN—See Fasteners, Tire Chain**HOOKS, TOW—See Hooks, Safety Tow****HORIZONTAL BORING MACHINES—See Machines, Horizontal Boring****HORN BULBS—See Bulbs, Rubber Horn****HORN BUTTONS—See Buttons, Push****HORN BUTTONS FOR FORDS—See Buttons, Special Horn****HORN PEDALS—See Pedals, Horn****HORN REEDS—See Reeds, Horn****HORN SCREENS—See Screens, Horn****HORN SWITCHES—See Switches, Horn****HORN SWITCHES FOR FORDS—See Switches, Horn****HORN TUBES—See Tubing, Flexible****HORN VALVES—See Valves, Muffler Cut-out****HORNS, Bulb**

Arkay—See Riley-Klotz Mfg. Co.

Riley-Klotz Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 257.)

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.

HORNS, Electric*(Motor driven and vibrator type horns)*

Adams-Bagnall Electric Co., 7309 Platt St., Cleveland, O.

American Electric Co., 6401 S. State St., Chicago, Ill. "Samson."

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-Way." (See page 473.)

Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill. (See pages 177 and 809.)

C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for United Electrical Mfg. Co., Adrian, Mich. "Trojan.")

Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.)

Clero—See Fitzgerald Mfg. Co.

E. A. Laboratories, Inc., Brooklyn, N. Y. "Newtone," "Handphone." (See page 475.)

Fitzgerald Mfg. Co., Torrington, Conn. "Clero." (See page 411.)

General Phono Mfg. Co., Myria, O. (See page 177.)

Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. (See page 265.)

Handphone—See E. A. Laboratories.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass. "Reacto."

Inter-State Machine Products Co., 56 Allen St., Rochester, N. Y. "Sterling."

Klaxon Co., Newark, N. J. (See page 477.)

Minerva Mfg. Co., Minerva, O.

Newtone—See E. A. Laboratories.

North East Electric Co.—See North East Service, Inc.

North East Service, Inc., Rochester, N. Y. (Sole Distributors for North East Electric Co., Rochester, N. Y.)

O'Brien Electrophone Co., Hallowell, Me.

Paramount—See Auto Metal Products Co.

Piel Co.—See Cassidy Co.

Reacto—See Holtzer-Cabot Electric Co.

Ryt-O-Way—See Auto Metal Products Co.

Samson—See American Electric Co.

Schwarze Electric Co., Adrian, Mich. "Selco." (See page 471.)

Selco—See Schwarze Electric Co.

Sparks-Withington Co., Jackson, Mich. "Sparton."

Sparton—See Sparks-Withington Co.

Sterling—See Inter-State Machine Products Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)

Trojan—See C. A. S. Engineering Co.

United Electrical Mfg. Co.—See C. A. S. Engineering Co.

Warner Electric Co., 2507 S. Walnut St., Muncie, Ind.

HORNS, Electric, for Fords*(Motor driven and vibrator type horns)*

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-Way." (See page 473.)

Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill. (See pages 177 and 809.)

Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.)

Clero—See Fitzgerald Mfg. Co.

E. A. Laboratories, Inc., Brooklyn, N. Y. "Newtone," "Handphone." (See page 475.)

Fitzgerald Mfg. Co., Torrington, Conn. "Clero." (See page 411.)

General Phono Mfg. Co., Myria, O. (See page 177.)

Handphone—See E. A. Laboratories.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Klaxon Co., Newark, N. J. (See page 477.)

Newtone—See E. A. Laboratories.

Piel Co.—See Cassidy Co.

Sparks-Withington Co., Jackson, Mich. "Sparton."

Sparton—See Sparks-Withington Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)

Everything is listed under the NOUN or principal word

HOODS, FENDERS, TANKS

FOR
TRACTORS, TRUCKS AND AUTOMOBILES

ALSO

Sheet Metal Stampings. **Q** Brass, Bronze and Aluminum Castings. **Q** Gasoline and Kerosene Fire Pots, Torches and Braziers. **Q** Oil Burning Machines for Compressed Air for Preheating, Tempering, Etc.

CLAYTON & LAMBERT MFG. CO.

10567 Knodell Avenue, Near Detroit Terminal Railway

DETROIT, MICH. U.S.A.

YES, we are the manufacturers of the
"HUSK" Exhaust Chimes



Made in two sizes. Polished Brass

"WB" Sprag Levers

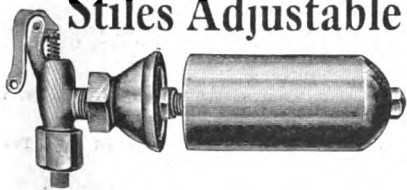


Made in two sizes

WESTERN BRASS MANUFACTURING WORKS

STANDARD AND SPECIAL AUTO ACCESSORIES
Marshall Boulevard and 21st St., CHICAGO

Stiles Adjustable Explosion Whistle



Price \$4.00 Complete

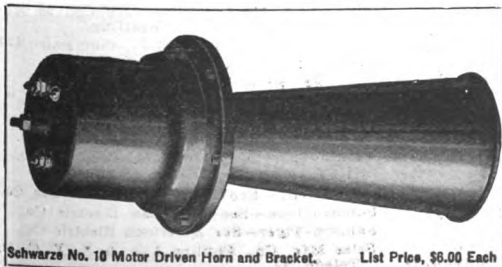
Ask Your Jobber
If he can not supply you, order direct from us

Stiles Mfg. Company
ST. LOUIS, MO.

Schwarze Horns

Vibrator and Motor Driven Types. Circuit Breakers. Push Buttons. Electric Bells for the Factory, Department Store, Boats, Mines, Street Cars, Pipe Lines. Telephone Extension Bells and Buzzers.

Schwarze Electric Co.
Adrian Mich.



Schwarze No. 10 Motor Driven Horn and Bracket. List Price, \$6.00 Each

Please mention The Automobile Trade Directory

HORNS, Engine Operated

American Strombos Co., 1-5 S. 18th St., Philadelphia, Pa. "Strombos."
 Strombos—See American Strombos Co.

HORNS, Exhaust

(Tube Horns or Chimes and Whistles)

Aermore—See Fulton Co.
 Amco—See Chicago Electric Mfg. Co.
 American—See Clark, Alfred H.
 Arkay—See Riley-Klots Mfg. Co.
 Autobird—See Richfield Mfg. Co.
 Autochime—See Gray-Hawley Mfg. Co.
 B & B Mfg. Co., 2823-25 Arsenal St., St. Louis, Mo.
 Bailey Co., W. J., 401 Mulberry St., Newark, N. J.
 Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.
 Brookins Mfg. Co., Dayton, O.
 Big Four Horn Co., Waukegan, Ill.
 Buell Mfg. Co., Cottage Grove at 30th, Chicago, Ill. (See page 473.)
 Chicago Electric Mfg. Co., 523-29 Van Buren St., Chicago, Ill. "Amco."
 Clark, Alfred H., 1307 Howard Ave., Bridgeport, Conn. "American."
 Duplex Machine Co., 93 Lafayette St., Newark, N. J. "Melotone."
 Eco Signal Mfg. Co., 501 S. Dearborn St., Chicago, Ill.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. "Aermore."
 (See pages 569 to 574.)
 Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, O.
 Gray-Hawley Mfg. Co., 1123-31 Jefferson Ave., E. Detroit, Mich. "Autochime."
 Husk—See Western Brass Mfg. Works.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill. "Nopowerloss."
 Inter-State Tool & Mfg. Co., 3419-21 Rutger St., St. Louis, Mo. "T-N-T."
 Jericho—See Randall-Falchney Co.
 Jubilee—See Randall-Falchney Co.
 Liberty—See Stiles Mfg. Co.
 Mechanical Lathe Co., 2411 S. Springfield Ave., Chicago, Ill. "Star."
 Melotone—See Duplex Machine Co.
 Mormiles Co., 416 Sherman St., Chicago, Ill.
 Nopowerloss—See Illinois Brass Mfg. Co.
 Racine Accessories Mfg. Co., 14th & Clark Sts., Racine, Wis.
 Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Jericho," "Jubilee."
 Richfield Mfg. Co., 1913 Pine St., St. Louis, Mo. "Autobird."
 Riley-Klots Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."
 Safety—See Sampson Mfg. Co.
 Sampson Mfg. Co., 1607-11 Prairie Ave., Chicago, Ill. "Safety."
 Serum & Co., Chas. H., 3301 W. Chicago Ave., Chicago, Ill.
 Star—See Mechanical Lathe Co.
 Stiles Mfg. Co., St. Louis, Mo. "Liberty."
 (See page 471.)
 T-N-T—See Inter-State Tool & Mfg. Co.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. "Husk."
 (See page 471.)

HORNS, Exhaust, for Fords

(Tube Horns or Chimes and Whistles)

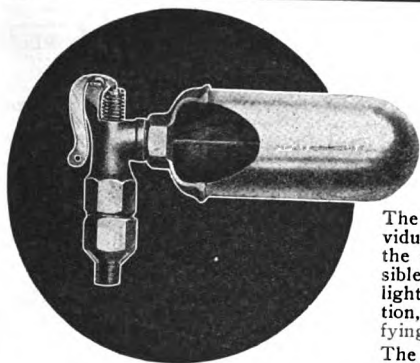
Aermore—See Fulton Co.
 Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill.
 Barco Mfg. Co., 212-22 W. Illinois St., Chicago, Ill.
 Buell Mfg. Co., Cottage Grove at 30th, Chicago, Ill. (See page 473.)
 Fulton Co., 75th & National Aves., Milwaukee, Wis. "Aermore."
 (See pages 569 to 574.)
 Jericho—See Randall-Falchney Co.
 Jubilee—See Randall-Falchney Co.
 Klaxon Co., Newark, N. J. (See page 477.)
 Minerva Mfg. Co., Minerva, O.
 Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Jericho," "Jubilee."
 Stiles Mfg. Co., St. Louis, Mo. (See page 471.)
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)

HORNS, HAND—See Horns, Bulb; also Horns, Mechanical**HORNS, Mechanical**

(Hand operated diaphragm horns; for Road Horns—See Horns, Bulb)

A-K—See Angsten-Kox Co.
 American Electric Co., 6401 S. State St., Chicago, Ill. "Samson-Tiger," "Samson-Lion."
 Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."
 Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-Way." (See page 473.)
 Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.)
 Clero—See Fitzgerald Mfg. Co.
 E. A. Laboratories, Inc., Brooklyn, N. Y. "Newtone," "Handphone."
 (See page 475.)
 Fitzgerald Mfg. Co., Railroad Ave., Torrington, Conn. "Clero."
 (See page 411.)
 General Phone Mfg. Co., Elyria, O. (See page 177.)
 Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. (See page 265.)
 Handphone—See E. A. Laboratories.
 Heco—See Heinze Electric Co.
 Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."
 Inter-State Machine Products Co., 56 Allen St., Rochester, N. Y. "Sterling."
 Klaxon Co., Newark, N. J. (See page 477.)
 Leader—See Talking Horn Co.
 M-L—See Miller-Lovatt Co.
 Miller-Lovatt Co., Weatherly, Pa. "M-L."
 Newtone—See E. A. Laboratories.
 O. B.—See Talking Horn Co.
 Paramount—See Auto Metal Products Co.
 Piel Co.—See Cassidy Co.
 Ryt-O-Way—See Auto Metal Products Co.
 Samson-Lion—See American Electric Co.
 Samson-Tiger—See American Electric Co.
 Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
 Sparks - Withington Co., Jackson, Mich. "Sparton-Echo," "Spartonet."

Everything is listed under the NOUN or principal word



Highest Tone Quality—

The tone of the Buell is strikingly individual. Receiving its power direct from the motor it has strength for every possible emergency, yet it may be sounded as lightly as desired. It compels instant action, yet it is not inharmonious nor terrifying.

The Buell is approved by the Underwriters' Laboratories and guaranteed for 10 years. Made in Single Tone and Chime, \$3, \$5 and \$7.

BUELL MANUFACTURING COMPANY

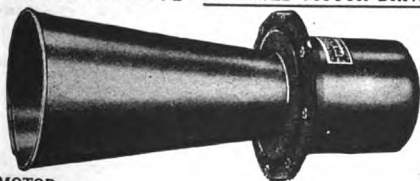
Cottage Grove at 30th - Chicago, Illinois

BUELL

EXPLOSION WHISTLE

WARNS EVERY TIME

PARAMOUNT IMPROVED MOTOR DRIVEN AUTO WARNING SIGNALS



MOTOR

Guaranteed high speed and runs on a solid casting frame. Smooth, true running—a perfect Torque.

COMMUTATORS

Seven segmented—mica insulated.

FIELD COILS

Of perfectly insulated wire, linen taped, and moisture resisting. Wound to give maximum power at minimum current consumption.

BRUSHES

Square, copper brushes are enclosed in casting.

ARMATURE

Adjusted to give maximum revolutions. Impossible to get out of alignment.

VOLTAGE

Wound for 6 volts. Can be wound for 12 volts at small extra charge.

CURRENT CONSUMPTION

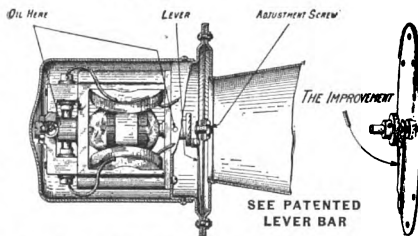
3-6 amperes.

OPERATION

Direct from regular starting and lighting battery of the car, or on 6 volt storage battery, or on 6 dry cells, or 6 volt Hot Shot, or 6 volt Red Seal Sparker.

Latest development in Electric Horns eliminating difficulties experienced in the past and buckling of diaphragm. Patented Lever Bar with riveted anvil prevents buckling, relieves diaphragm of a destructive stress, absorbs considerable of the metallic tone, admits use of a more powerful motor and insures maximum amount of warning signals right at the very start.

Instantaneous pick up at maximum capacity.



In eleven (11) different Models, including FORD-HORNS. Brackets furnished suitable for any make of car and adaptable to a variety of positions.

Circulars and Trade Discounts on Application

AUTO-METAL-PRODUCTS CO., Inc., 432 E. 71st St., NEW YORK CITY

Please mention The Automobile Trade Directory

HORNS, Mechanical (Continued)

Sparton-Echo—See Sparks-Withington Co.
 Spartonet—See Sparks-Withington Co.
 Standard Auto Horn Co., 207 Broadway, Everett, Mass.
 Standard Metal Mfg. Co., 227 Chestnut St., Newark, N. J.
 Sterling—See Inter-State Machine Products Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)
 Talking Horn Co., Central Bldg., Middletown, N. Y. "O. B.," "Torpedo," "Leader."
 Torpedo—See Talking Horn Co.

HORNS, Mechanical, for Fords

(Hand operated diaphragm horns)

Auto Metal Products Co., 432 E. 71st St., New York, N. Y. "Paramount," "Ryt-O-Way." (See page 473.)
 Cassidy Co., Edward A., 23 W. 43rd St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y.)
 Clero—See Fitzgerald Mfg. Co.
 Fitzgerald Mfg. Co., Torrington, Conn. "Clero." (See page 411.)
 Klaxon Co., Newark, N. J. (See page 477.)
 Leader—See Talking Horn Co.
 O. B.—See Talking Horn Co.
 Paramount—See Auto Metal Products Co.
 Piel Co.—See Cassidy Co.
 Ryt-O-Way—See Auto Metal Products Co.
 Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
 Sparks-Withington Co., Jackson, Mich.
 Standard Auto Horn Co., 207 Broadway, Everett, Mass.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)
 Talking Horn Co., Central Bldg., Middletown, N. Y. "O. B.," "Torpedo," "Leader."
 Torpedo—See Talking Horn Co.

HORNS, Siren

(For Ambulances, Police and Fire Department Apparatus)

Inter-State Machine Products Co., 56 Allen St., Rochester, N. Y. "Sterling."
 O'Brien Electrophone Co., Hallowell, Me.
 Sireno Co., 18-20 Rose St., New York, N. Y.
 Sterling—See Inter-State Machine Co.

HORSES, TRESTLES and TRUCKS

Autohorse—See Bailey-Drake Co.
 Bailey-Drake Co., 1120 S. Michigan Ave., Chicago, Ill. (Sales Department for Safety Equipment Co., West Mentor, O. "Autohorse.")
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. "Hildreth." (See page 819.)
 Hildreth—See Frasse & Co.
 Johnstown Automobile Co., Johnstown, Pa.
 Safety Equipment Co.—See Bailey-Drake Co.

HOSE BOXES—See Boxes, Standard and Curb

HOSE CLAMPS—See Clamps, Hose

HOSE COUPLINGS—See Clamps, Hose

HOSE, FLEXIBLE METAL—See Tubing, Flexible Metallic; also Hose, Metal Lined

HOSE, GASOLINE—See Hose, Metal Lined

HOSE, Metal Lined

(For use with gasoline pumps)

American Metal Hose Co., Waterbury, Conn. (See page 287.)
 Atlantic Metal Hose Co., 40 W. 80th St., New York, N. Y.
 Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass.
 Breeze Metal Hose & Mfg. Co., 250-52 South St., Newark, N. J.
 Chicago Tubing & Braiding Co., 216-24 N. Clinton St., Chicago, Ill. "Rex."
 Dewes Co., A., 199 Lafayette St., New York, N. Y.
 Metal Hose & Tubing Co., 230 Tillary St., Brooklyn, N. Y. "Triplexd." (See page 475.)
 Mulconroy Co., 54th & Jefferson St., Philadelphia, Pa.
 Penflex—See Pennsylvania Flexible Metallic Tubing Co.
 Pennsylvania Flexible Metallic Tubing Co., Philadelphia, Pa. "Penflex."
 Rex—See Chicago Tubing & Braiding Co.
 Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 908.)
 Triplexd—See Metal Hose and Tubing.
 Whalen Co., John, 25 Purchase St., Boston, Mass.

HOSE, RADIATOR—See Hose, Rubber

HOSE, Radiator, for Fords

Asbestos & Rubber Works of America, 1819 Broadway, New York, N. Y. "Moto-Bestos." (See page 530.)
 Beaver—See Mechanical Rubber Co.
 Cincinnati Rubber Mfg. Co., Cincinnati, O. (See page 475.)
 Cooper—See Giant Tire & Rubber Co.
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O. "Copper."
 Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Beaver."
 Mercer Rubber Co., 11 Hamilton Square, N. J.
 Moto-Bestos—See Asbestos & Rubber Works of America.
 Thermoid Rubber Co., Trenton, N. J. (See page 531.)
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.
 United Metal Hose Co., 532 W. 22d St., New York, N. Y.
 United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J.
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

HOSE REELS, AUTOMATIC—See Reels, Automatic Hose

HOSE, Rubber

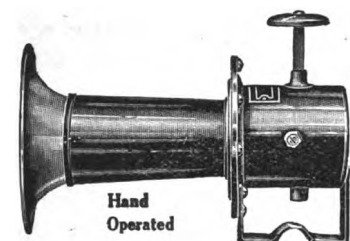
(Radiator hose, including molded radiator connections)

A-B-C—See American Brake-Lining Co.
 Acme Rubber Mfg. Co., Trenton, N. J.
 American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 533.)

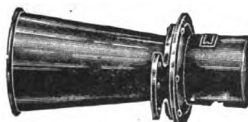
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E.A. MOTOR DRIVEN & HAND HORNS

NEWTONE & HANDPHONE MOTOR & HAND HORNS



Hand
Operated



Especially
Built For
Equip-
ment Pur-
poses.

Under Hood Type

Write for particulars

E. A. LABORATORIES, Inc.

BROOKLYN, NEW YORK, U. S. A.

Proprietors of

AUTOMOBILE SUPPLY MFG. CO.

The Cincinnati Rubber Mfg. Co.

Cincinnati, Ohio

LOSANT — Air Hose — Extra heavy, for Public Garage use. Does not require wire wrapping.

FIDELITY Air Hose—for Private Garage use.

NORKA Radiator Hose.

PURITAN—Gasoline Hose.

ARNO—Brake Lining.

WAMPUS — Graphited Fibre Sheet.

SANDOW—Fibre Sheet.

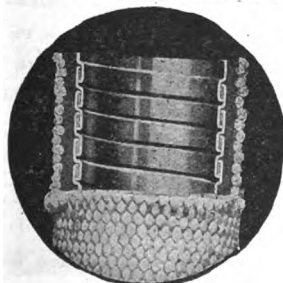
ROYAL—Red and Black Asbestos Sheet.

OLD CROW—Valve Stem Packing.

ROYAL Generator Tubing.

Special Rubber Parts moulded to order.

TRIPLEXD



There is no hose exactly like **TRIPLEXD**. **TRIPLEXD** construction (the way the metal, rubber and fabric are built into a permanent unit) explains **TRIPLEXD** performance.

"The average service life of **TRIPLEXD** is over two years.

Main Office and Factory:
230 Tillary Street, Brooklyn, N. Y.
Chicago Office:
35 North Dearborn Street

Triplexd Gasoline Hose is the strongest, most flexible and durable gasoline, oil and paint spray hose. It will give you better service than any other hose at any price.

List Prices

(Substantial discounts quoted on request)

Size (Inside diameter)	Hose per ft.	Coupling
$\frac{1}{2}$ inch	\$0.70	\$2.00
$\frac{3}{4}$ inch	1.00	2.40
1 inch	1.20	3.50
$1\frac{1}{4}$ inch	1.80	6.60

Prices of larger sizes on application

We make and carry in stock couplings for all standard gasoline pumps. Briggs Standard Pipe Thread furnished unless otherwise specified.

Guarantee

Every length of **TRIPLEXD** Pump Hose bears a serial number and is specifically guaranteed for one year's service.* We stand back of every length of **TRIPLEXD** in the world

Specify **TRIPLEXD** for Replacement—It means fewer Replacements

METAL HOSE & TUBING CO.
INCORPORATED
230 Tillary St.
BROOKLYN, N. Y.

Lengths of **TRIPLEXD** are still on the job after four years' service.

Western Offices:
Mills Bldg., San Francisco
Higgins Bldg., Los Angeles

Please mention The Automobile Trade Directory

HOSE, Rubber (Continued)

Anchor Packing Co., 72 Murray St., New York, N. Y. "Ankorite."
 Ankorite—See Anchor Packing Co.
 Barcus—See Electric Hose & Rubber Co.
 Boston Belting Co., 84 Linden Park St., Boston, Mass.
 Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass. "Sterling."
 Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.
 CCC—See Canton Rubber Works.
 Canton Rubber Works, 209 Washington St., Boston, Mass. "CCC."
 Chamberlain Co., E. F., 184 Summer St., Boston, Mass.
 Cincinnati Rubber Mfg. Co., Cincinnati, O. "Werka," "Fidelity," "Losant," "Sandow," "Puritan." (See page 475.)
 Cleveland—See Mechanical Rubber Co.
 Combination Rubber Mfg. Co., Bloomfield, N. J.
 Conqueror—See Voorhees Rubber Mfg. Co.
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalto."
 Cooper—See Giant Tire & Rubber Co.
 Cyrus—See Electric Hose & Rubber Co.
 Dugas-Hundley Corp., 39 W. 34th St., New York, N. Y. "Reliance."
 Dural Rubber Corp., Flemington, N. J. (See page 349.)
 Duro—See Electric Hose & Rubber Co.
 Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (New Jersey Distributors for "Vulco" Hose.) (See page 495.)
 Electric Hose & Rubber Co., 12th & Duro Sts., Wilmington, Del. "Duro," "Laconic," "Cyrus," "Velvet," "Supero," "Barcus."
 Empire Tire & Rubber Co., Mulberry St. & Clinton Ave., Trenton, N. J.
 Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "J. E."
 Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Fidelity—See Cincinnati Rubber Mfg. Co.
 Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
 Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O. "Cooper."
 Goodrich Co., B. F., S. Main St., Akron, O.
 Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
 Hewitt Rubber Co., 340 Kensington Ave., Buffalo, N. Y.
 Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind.
 Home Tire Co., Trenton, N. J.
 J. E.—See Eno Rubber Co.
 Laconic—See Electric Hose & Rubber Co.
 Losant—See Cincinnati Rubber Mfg. Co.
 Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
 Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Usco."
 Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O. "Cleveland."
 Mercer Rubber Co., Hamilton Square, N. J.
 Mikessell Brothers Company, 156 N. La Salle St., Chicago, Ill. (See page 530.)
 Milford Rubber Works, Milford, Ill.
 National India Rubber Co., Bristol, R. I.
 New York Belting & Packing Co., 91 Chambers St., New York, N. Y.
 Norika—See Cincinnati Rubber Mfg. Co.
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Puritan—See Cincinnati Rubber Mfg. Co.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.

Red Wing—See Sponge Tire & Rubber Co.
 Reliance—See Dugas-Hundley Corp.
 Republic Rubber Co., Albert St., Youngstown, O.
 Sandow—See Cincinnati Rubber Mfg. Co.
 Sponge Tire & Rubber Co., W. Third St., Red Wing, Minn. "Red Wing."
 Sterling—See Boston Woven Hose & Rubber Co.
 Supero—See Electric Hose & Rubber Co.
 Thermoid Rubber Co., Trenton, N. J. (See page 531.)
 United States Rubber Co., 1790 Broadway, New York, N. Y.
 United & Globe Rubber Co., Prospect & Fraser Sts., Trenton, N. J.
 Usco—See Mechanical Rubber Co.
 Velvet—See Electric Hose & Rubber Co.
 Vitalto—See Continental Rubber Works.
 Voorhees Rubber Mfg. Co., 26-56 Bostwick Ave., Jersey City, N. J. "Conqueror."
 Vulco—See Gates Rubber Co.
 Whitehead Bros. Rubber Co., Trenton, N. J.
 Woven Steel Hose & Rubber Co., Dale St., Trenton, N. J.

HOT ROLLED STRIP STEEL—See Steel, Hot Rolled Strip

HOUSING BRACES FOR FORDS—See Braces, Drive Shaft Housing

HOUSING PULLERS FOR FORDS—See Pullers, Axle Housing

HOUSINGS, Pressed Steel Axle

(See also Stampings, Steel)

Bossert Corp., Utica, N. Y.
 Crosby Co., Buffalo, N. Y. (See page 813.)
 Detroit Pressed Steel Co., Detroit, Mich. (See page 943.)
 Hydraulic Pressed Steel Co. of the Hydraulic Steel Co., Cleveland, O.
 La France Truck Co., Ward, Grand Central Ave. & 11th St., Elmira Heights, N. Y.
 Parish Mfg. Co., Reading, Pa.
 Parish & Bingham Corp., Cleveland, O. (See page 242.)
 Sharon Pressed Steel Co., Sharon, Pa. (See page 391.)
 Smith Corp., A. O., Milwaukee, Wis. (See page 435.)
 Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)

HUB BRAKES—See Brakes, Expanding and Contracting

HUB CAP WRENCHES FOR FORDS—See Wrenches, Hub Cap

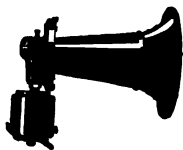
HUB CAPS—See Caps, Hub

HUB DRUMS—See Winches and Blocks, Car Extracting

HUBS, Demountable, for Fords

(For Demountable Wheels—See Wheels, Demountable)
 Angiers, 500 N. Vermillion St., Streater, Ill.
 Autoware Corp., 441 State St., Detroit, Mich. "Dann."
 Bronxco Wheel Co., 586-87 Jackson Ave., New York, N. Y.
 Dann—See Autoware Corp.
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. "Minute."
 Minute—See Hill-Smith Metal Goods Co.
 Peerless Products Co., Peerless Bldg., Toledo, O.

Everything is listed under the NOUN or principal word



For every type of Passenger Car, Truck, Motorcycle, there is a Klaxon Warning Signal. And a Klaxon is unfailing in action, at all times, under all conditions.

Klaxons give that sharp, distinct warning sound that always gains the right of way.

And the complete line of Klaxon Warning Signals will easily gain and retain for you the right of way in sales.

KLAXON
Company, Newark, N.J.

A. E. M. Freezometer and Battery Test-O-Meter

Below is brief description of two very necessary motor car accessories needed by every car owner.

Write us today and we will send you our terms to the trade.



FREEZOMETER

Radiators will freeze. Every year thousands are destroyed from this cause.

The "Freezometer" is the only article of its kind. It is an assurance against frozen radiators or cracked cylinders. Another accessory that every car owner should have.

Retails for \$1.50.

BATTERY TEST-O-METER

is used for determining the charge, mixing the acids, and diagnosing the troubles of Storage Batteries, Motor Trucks, etc.

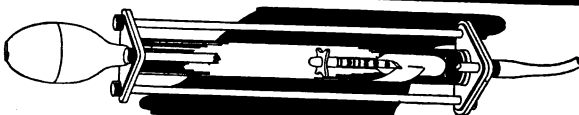
This instrument also has an exclusive patented (non-stick) feature, which makes it impossible for the hydrometer to stick to the side of the barrel.

Retails for \$1.50.

Write us today for terms to the trade

A. E. MOELLER
261 Sumpter St. BROOKLYN, N. Y.

**DUR-
ABLE**



**SERVICE-
ABLE**

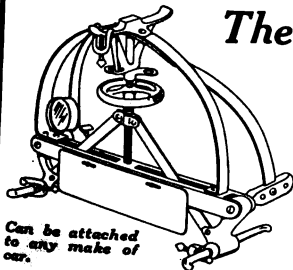
THE PERFECTION HYDROMETER SYRINGE PATENT PENDING

This instrument is made of the best non-conductive material. The glass is a high-test steam tubing with an eighth inch wall, is protected by hard rubber rods one-quarter inch thick to prevent the glass from breaking in case tools are laid on or happen to fall on it, which has very often occurred. It is triangular in shape and will not roll. Positively air tight. Will outwear any other hydrometer on the market. Invented by W. E. Biebow, who has had fifteen years of battery experience.

THE PERFECTION HYDROMETER COMPANY

742 Turner Street

Los Angeles, Cal.



Can be attached
to any make of
car.

The Triple-Grip Adjustable Tire Carrier and Changer

CARRIES TWO TIRES—CARRIES TAIL LAMP AND LICENSE PLATE—LOCKS WITHOUT UNSIGHTLY STRAPS, CHAINS OR ROPES—REMOVES RIM FROM TIRE—CHANGE YOUR RIM AND TIRE ON THE CARRIER ITSELF.

The Hamilton Caster & Mfg. Co.
HAMILTON OHIO

Please mention The Automobile Trade Directory

HUBS, Demountable, for Fords (Continued)

Rapid Change Wheel Co., 50 Division St., S. E., Grand Rapids, Mich.
 Simplicity Mfg. Co., 1981 E. 97th St., Cleveland, O.
 Stone Mfg. Co., Chicago, Ill.
 (See page 707.)
 Telford—See White Machine Works.
 White Machine Works, A. E., Eau Claire, Wis.
 "Telford."

HUBS, Wheel

(For Hub Flanges—See Flanges, Pressed Steel)

American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.
 Bossert Corp., Utica, N. Y.
 Crosby Co., Buffalo, N. Y. (See page 818.)
 Kelsey Wheel Co., Detroit, Mich.
 (See page 953.)
 Salisbury Axle Co., Jamestown, N. Y.
 (See page 968.)
 Standard Gear Co., 5930 Commonwealth Ave., Detroit, Mich.

HUBS, Wheel for Fords

Allith-Prouty Co., Danville, Ill.
 (See page 763.)

HUMIDIFIERS—See Moisteners, Air

HYDRAULIC BRAKES—See Brakes, Hydraulic

HYDRAULIC SHOCK ABSORBERS—See Shock Absorbers, Friction, Hydraulic and Pneumatic

HYDRAULIC TESTING DYNAMOMETERS—See Dynamometers, Hydraulic Testing

HYDROMETER BOXES—See Boxes, Wrench and Small Tool

HYDROMETERS, Testing

(For testing Battery Electrolyte, Gasoline, etc.)

A. E. M.—See Moeller, A. E.
 Ala Mfg. Co., 411-17 S. Sangamon St., Chicago, Ill. "Read-Easy."
 American Thermo-Ware Co., 16 Warren St., New York, N. Y. "Autocrat."
 Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Workrite Hydrometers.)
 (See page 247.)
 Autocrat—See American Thermo-Ware Co.
 Battery Equipment & Supply Co., 1458 Michigan Ave., Chicago, Ill.
 (See page 323.)
 Beck & Co., Oscar, 330 Maujer St., Brooklyn, N. Y.
 Beckley-Ralston Co., Michigan Blvd. & 15th St., Chicago, Ill. "Master," "Radiometer." (See page 498.)
 Breaknot—See Edelmenn & Co.
 Dependable—See Standard Motor Products Mfg. Corp.

Doggsman Accessory Co., 2906 Marshall Ave., Cincinnati, O.

Edelmenn & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Breaknot."
 (See page 523.)

Freesometer—See Taylor Instrument Cos.
 Genco—See General Scientific Equipment Co.
 General Scientific Equipment Co., (North Philadelphia), Philadelphia, Pa. "Genco."

Griebel Instrument Co., River St., Carbondale, Pa.

Hydrokit—See Steiner Mfg. Co.

Kant Stick—See Scranton Glass Instrument Co.

Luthy Hydrometer Co., 97 Woodward Ave., Detroit, Mich.

Master—See Beckley-Ralston Co.

Moeller, A. E., 261 Sumpter St., Brooklyn, N. Y. "A. E. M." (See page 477.)

Newbrooke—See Tagliabue Mfg. Co.

Optical Specialties Co., 132 Church St., New York, N. Y. "Test Right."

Perfection Hydrometer Co., 742 Turner St., Los Angeles, Cal. (See page 477.)

Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Radiometer—See Beckley-Ralston Co.

Read-Easy—See Ala Mfg. Co.

Reliable—See Scranton Glass Instrument Co.
 Rieker Instrument Co., 1018-21 Fairmount Ave., Philadelphia, Pa.

Scranton Glass Instrument Co., 322 N. Washington Ave., Scranton, Pa. "Simplex," "Reliable," "Kant Stick."

Simplex—See Scranton Glass Instrument Co.

Stadco—See Stadeker Metal Specialty Co.

Stadeker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."

Standard Motor Products Mfg. Corp., 908 W. Chicago Ave., Chicago, Ill. "Dependable."

Steiner Mfg. Co., 590-99 Jackson Ave., Long Island City, N. Y. "Hydrokit," "Wintometer."

Storage Battery Supply Co., 239 E. 27th St., New York, N. Y.

Tagliabue Mfg. Co., C. J., Bush Terminal Bldg., Brooklyn, N. Y. "Newbrooke."

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y. "Freesometer."

Test Right—See Optical Specialties Co.

Weinhagen & Hespe, 159-65 Leonard St., New York, N. Y.

Weiss & Son, Albert A., 572 Gates Ave., Brooklyn, N. Y.

Wintometer—See Steiner Mfg. Co.

Workrite Mfg. Co., 5606 Euclid Ave., Cleveland, O.

HYDROSTATIC DYNAMOMETERS—See Dynamometers, Hydrostatic

IGNITION CABLE—See Wire, Insulated

IGNITION CUT-OUTS FOR FORDS—See Cut-Outs, Automatic Ignition

IGNITION DYNAMOS—See Magnetos, Ignition

IGNITION SWITCH CONTROLS—See Controls, Ignition Switch

IGNITION SWITCHES—See Switches, Ignition

IGNITION SYSTEMS, SINGLE SPARK—See Systems, Battery Ignition

IGNITION TIMERS—See Timers, Ignition

Everything is listed under the NOUN or principal word

- IGNITION WINDINGS**—See Windings, Starter and Ignition
- IGNITION WIRE**—See Wire, Insulated
- IGNITION WIRING FOR FORDS**—See Sets, Wiring
- IMITATION LEATHER**—See Leather, Artificial
- IMPULSE STARTERS**—See Starters, Impulse
- INCANDESCENT LAMPS**—See Lamps, Miniature Incandescent
- INDICATING BAROMETERS**—See Barometers, Altitude Indicating
- INDICATING METERS**—See Meters, Water Temperature Indicating; also Barometers, Altitude Indicating; also Meters, Truck Load Indicating; also Meters, Oil Temperature Indicating; also Meters, Distance Recording; also Speedometers
- INDICATING SIGNALS**—See Signals, Direction Indicating or Traffic
- INDICATORS, AUTOMOBILE SPEED**—See Speedometers
- INDICATORS, CIRCULATION**—See Gages, Water; Also Sight Feeds
- INDICATORS, COMPRESSION**—See Gages, Cylinder Compression
- INDICATORS, DISTANCE OR MILEAGE**—See Meters, Distance
- INDICATORS, FUEL LEVEL**—See Gages, Gasoline Tank
- INDICATORS, Gasoline Engine**
Dayton-Wright Division of The General Motors Corp., Dayton, O. "Midgley."
Midgley—See Dayton-Wright Division.
- INDICATORS, GRADE**—See Meters, Grade
- INDICATORS, OIL CIRCULATION**—See Sight Feeds, Independent
- INDICATORS, SPARK**—See Gaps, Spark
- INDICATORS, SPEED**—See Speedometer
- INDICATORS, STORAGE BATTERY TEMPERATURE**—See Thermostats, Storage Battery
- INDICATORS, TANK**—See Gages, Gasoline Tank
- INDICATORS, TIRE PRESSURE**—See Gages, Tire Pressure
- INDICATORS, Tractor Engine Speed**
Waltham Watch Co., Waltham, Mass.
- INDICATORS, WATER CIRCULATION**—See Gages, Water Circulating
- INFLATORS, DISC WHEEL TIRE**—See Connections, Disc Wheel Tire
- INFLATORS, TIRE**—See Pumps; also Tanks
- INJECTORS, Boiler Feeding**
American Injector Co., 1469 14th Ave., Detroit, Mich. "U. S."
U. S.—See American Injector Co.
- INJECTORS, GREASE**—See Guns, Grease
- INJECTORS, WATER**—See Moisteners, Air
- INNER TIRE SHOES**—See Shoes, Inner Tire
- INNER TUBE BAGS**—See Covers, Spare Tire
- INNER TUBE MANDRELS**—See Mandrels, Inner Tube
- INNER TUBE TESTING TANKS**—See Tanks, Inner Tube Testing
- INNER TUBES**—See Tubes, Inner
- INSERTING TOOLS**—See Tools, Valve Pin Inserting
- INSERTS, CLUTCH**—See Corks, Brake and Clutch
- INSERTS, SPRING LEAF**—See Strips, Spring Leaf
- INSERTS, Transmission Band, for Fords**
(Spring steel strips to be inserted between band and lining to cause bands to engage more smoothly)
Huber Co., F. L., 221 N. Channing Ave., St. Louis, Mo.
- INSPECTING MACHINES, TIRE**—See Machines, Tire Inspecting
- INSPECTION LAMPS**—See Lamps, Electric Hand
- INSTRUMENT BOARDS**—See Cows
- INSTRUMENTS, Electrical Circuit Testing**
(For Ammeters and Voltmeters—See Ammeters; For Battery Gages—See Gages, Battery.)
Ambu—See American Bureau of Engineering
American Bureau of Engineering, 1609 S. Michigan Ave., Chicago, Ill. "Ambu."
(See page 147.)
Anderson—See West Mfg. Co.
Bestall Electric Co., 14 E. Jackson Blvd., Chicago, Ill. "Testzall."
Cliff Instrument Co., Lee, 1748 W. 48th St., Los Angeles, Calif.
Cowie Electric Co., E. S., Kansas City, Mo. (See page 481.)
Defectometer—See Nishoff & Co.
Dorbeck, R. V., Brighton Ave., Long Branch, N. J.
Durham Co., P. J., 244 W. 48th St., New York, N. Y.
Edgerton & Co., R. G., Suffolk, Va.
Electric Power Maintenance Co., 1101-09 Monroe St., Toledo, O. "Testaphone."

Everything is listed under the NOUN or principal word

INSTRUMENTS, Electrical Circuit Testing (Continued)

Generometer—See Niehoff & Co.
 Harlan Ignition Instrument & Mfg. Co., Wat-
 sonville, Cal.
 Hugo Mfg. Co., J., 218 George St., New Haven,
 Conn. "Testalite."
 Igni-Test—See Testall Electric Mfg. Co.
 Mag Fixer—See Stahl Rectifier Co.
 Mohawk Electric Mfg. Co., 15 Kirk Pl., New-
 ark, N. J.
 Niehoff & Co., Paul G., 232-42 E. Ohio St.,
 Chicago, Ill. "Defectometer," "Genero-
 meter," "Testkart." (See page 325.)
 North East Electric Co., Rochester, N. Y.
 Onan, David W., 1323 Penn Ave. N., Minne-
 apolis, Minn.
 Peco—See Phillips & Co.
 Phillips & Co., H. E., Union City, Ind. "Peco."
 Price Storage Battery Co., W. F., 1618 N.
 Broad St., Philadelphia, Pa.
 Quality Electric Products Co., 907 E.
 15th St., Kansas City, Mo.
 (See page 481.)
 Shontz Co., H. B., Dept. C., 161 W. 64th St.,
 New York, N. Y. (Metropolitan Distrib-
 utors for "Ambu" Instruments.)
 (See page 151.)
 Stahl Rectifier Co., 1401 W. Jackson Blvd.,
 Chicago, Ill. "Mag Fixer."
 Testkart—See Niehoff & Co.
 Testalite—See Hugo Mfg. Co.
 Testall Electric Mfg. Co., 610 Market St.,
 San Antonio, Tex. "Igni-Test."
 Testaphone—See Electric Power Maintenance
 Co.
 Testzall—See Bestall Electric Co.
 West Mfg. Co., 807 Keeney St., Abilene, Kan.
 "Anderson."

INSTRUMENTS, Engine Testing

(For locating knocks in engines)

American Electric Co., 6401 S. State St., Chi-
 cago, Ill. "Sonoscope."
 Chapman—See S. C. M. Corp.
 Fairbanks Co., New York, N. Y. (Sole dis-
 tributors for Hempy-Cooper Mfg. Co.,
 Kansas City, Mo. "Hammett.")
 (See pages 491 to 494.)
 General Sound Transmission Corp., 114
 Liberty St., New York, N. Y.
 Hammett—See Fairbanks Co.
 Hempy-Cooper Mfg. Co.—See Fairbanks Co.
 Hopewell Bros., Watertown, Mass. "Vi-
 brator." (See page 965.)
 Pilling & Son Co., G. P., Arch & 23d Sts.,
 Philadelphia, Pa. "Phonendoscope."
 Phonendoscope—See Pilling & Son Co.
 S. C. M. Corp., 105 E. 19th St., New York, N.
 Y. (Sole Distributors for Chapman Mfg.
 Co., St. Louis, Mo.)
 Sonoscope—See American Electric Co.
 Vibrator—See Hopewell Bros.

INSTRUMENTS, FELT TESTING—See In-
 struments, Rubber and Felt Testing

INSTRUMENTS, Gear Testing

Gleason Works, 1000 University Ave., Roches-
 ter, N. Y.

INSTRUMENTS, Metal Testing

(For Metal Testing Machines—See Machines,
 Metal Testing)

Brinell—See Holz, Herman A.

Brinell—See Pittsburgh Instrument & Machine
 Co.
 Gries Bros., 450-52 E. 148th St., New York,
 N. Y. "Standard."
 Holz, Herman A., 17 Madison Ave., New York,
 N. Y. "Brinell."
 Pittsburgh Instrument & Machine Co., 40
 Water St., Pittsburgh, Pa. "Brinell."
 Standard—See Gries Bros.

INSTRUMENTS, MOTOR TESTING—See
 Instruments, Engine Testing

INSTRUMENTS, Rubber and Felt Testing

Scleroscope—See Shore Instrument & Mfg. Co.
 Shore Instrument & Mfg. Co., 9025-29 Van
 Wyck Ave., Jamaica, N. Y. "Scleroscope"

INSTRUMENTS, Storage Battery Testing

(See also Gages, Battery; also Instruments,
 Electric Circuit Testing; also Hydrometers)

American Bureau of Engineering, 1609 S.
 Michigan Ave., Chicago, Ill.
 (See page 147.)
 Cassidy Co., Edward A., 23 W. 43rd St., New
 York, N. Y. (Sales Department for Cello-
 Ray Mfg. Corp., New York, N. Y. "Cell-
 O-Meter.")
 Cell-O-Meter—See Cassidy Co.
 CelloRay Mfg. Corp.—See Cassidy Co.
 Cowie Electric Co., E. S., Kansas City, Mo.
 (See page 481.)
 Forest Electric Co., 50 Columbia St., Newark,
 N. J.
 Hickok Electrical Instrument Co., Cleveland,
 Ohio.
 Hyrate—See Service Station Supply Co.
 M A C—See Metric Appliance Corp.
 Metric Appliance Corp., 299 Broadway, New
 York, N. Y. "M A C."
 Quality Electric Products Co., 907 E. 15th
 St., Kansas City, Mo. (See page 481.)
 Service Station Supply Co., 124 E. Larned
 St., Detroit, Mich. "Hyrate."
 Shontz Co., H. B., Dept. C., 161 W. 64th St.,
 New York, N. Y. "Shuro."
 (See page 151.)
 Shuro—See Shontz Co.
 Sterling Mfg. Co., 2845-53 Prospect Ave.,
 Cleveland, O.
 Thompson Battery Tester Co., Greensburg,
 Pa.
 Weindenhoff, Joseph, 4352 W. Roosevelt Rd.,
 Chicago, Ill.
 Weston Electrical Instrument Co., 16
 Weston Ave., Newark, N. J.
 (See page 481.)

**INSTRUMENTS, TRUCK LOAD INDICAT-
 ING**—See Meters, Truck Load Indicating

INSULATED STAPLES—See Staples, Insu-
 lated

INSULATED WIRE—See Wire, Insulated

INSULATING COMPOSITION—See Com-
 position, Insulating

INSULATING TAPE—See Tape, Insulating
 and Tire

INTAKE MANIFOLDS—See Manifolds, In-
 take and Exhaust

Everything is listed under the NOUN or principal word

Before You Buy Electric Testing and Repairing Equipment

send for a free copy of "Cowie Universal Shop Equipment for Testing and Repairing any and all makes of Automotive Electric Equipment.

The Cowie line includes the most modern equipment known, such as our Universal Testing Bench, Test Drive, Magneto Charger and Test Meter, Magneto and Ignition Coil Test Block, Armature Repair Stand, Circuit-Breaker Testing Device, Switchboard Meters, Battery Discharge Racks, Plate Burning Rack, Cowie Cadmium Test, Turn Table, Battery Jar Testing Coils, and other apparatus.

Get the New Cowie Universal Shop Equipment Catalog

Cowie Testing Equipment will earn you more money than any other machinery you can buy. It makes new business, saves your time and inspires your customers with confidence in your methods. It will more than pay for itself the first year.

E. S. COWIE ELECTRIC CO.
KANSAS CITY, MO.

"ELECTRIC SERVICE STATION ENGINEERS"

The Quality Growler

It tests Generator armatures or Starting armatures.

It detects troubles not found by the ordinary type of growler.

This automatic growler gives tests under operating conditions, short circuits and grounds in coils, leaks due to moisture and charred insulation, commutator trouble, loose leads, grounds and short circuited bars, reversed coils; transposed leads and other trouble quickly and accurately located. Comparative meter reading gives positive indication of all troubles that armatures and field coils are subject to.

FEATURES

Automatic Switch—Shunt Bars—Series Parallel Switch—Testing Bug

All possible armature troubles charted and instructions given for testing for each, with each device.

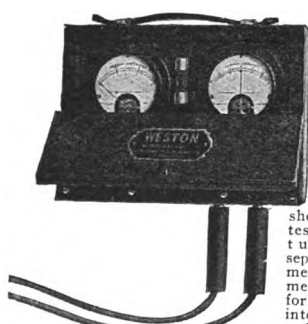
The Cadmium Tester—Another Quality trouble chaser. The Cadmium Tester is to your battery what the X-Ray is to the human body.

Quality Electric Products Co.

907 East 15th Street, Kansas City, Mo.

Weston Electrical Indicating Instruments

for
Garages and Service Stations
and for
Motor Cars and Boats

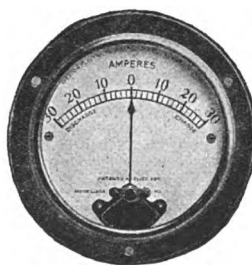


Model 441
"Fault-Finder"

A general utility instrument. Makes every test except measuring starting current or making short-circuit test on armatures. Has separate volt-meter and ammeter—cables for plugging into instrument—clip terminals to quickly connect to circuits. Ammeter protected by replaceable fuse to prevent burn-outs.

nect to circuits. Ammeter protected by replaceable fuse to prevent burn-outs.

For the Dashboard or Cowl



Model 354
Ammeter

Tells instantly and accurately the exact charge or discharge rate of current flow, and promptly detects loss of current due to short circuits or grounds.

Battery-Testing Voltmeter—Model 443

Takes exact measurements of the E. M. F. of individual cells. Also provides for the cadmium test.

Garage Testing Set—Model 280

Most complete, reliable and perfect testing instrument ever designed for Garage and Service Station use. Makes every type of test known for automobile electrical equipment. Has six ranges—30 and 3 volts, 100 milli-volts and 500, 30 and 3 amperes.

Prompt Shipments From Stock. Write Us—Today!

Weston Electrical Instrument Company

16 Weston Avenue

Newark, N. J.

Branches in All Principal Cities

Please mention The Automobile Trade Directory

INTAKE STRAINERS—See Cleaners, Air
INTAKE WASHERS—See Cleaners, Air
INTENSIFIERS, SPARK—See Gaps, Spark
INTERNAL BRAKE SHOES FOR FORDS—
 See Shoes, Brake
INTERNAL GRINDERS—See Grinders, Internal
IRON CASTINGS—See Castings
IRON CEMENT—See Cement, Cast Iron
IRON LINED BRASS TUBING—See Tubing, Iron Lined

IRON, Pig

Charcoal Iron Company of America, Union Trust Bldg., Detroit, Mich. "Cicco," "Pine Lake," "Hinkle," "Michigan," "Champion." (See page 483.)

Champion—See Charcoal Iron Co. of America.
 Cicco—See Charcoal Iron Co. of America.
 Cleveland Cliffs Iron Co., Cleveland, O.
 Hinkle—See Charcoal Iron Co. of America.
 Michigan—See Charcoal Iron Co. of America.
 Pine Lake—See Charcoal Iron Co. of America.

IRON RIVETS—See Rivets, Iron

IRON WASHERS—See Washers, Iron

IRONS, Body or Top

(For Top Holders—See Holders, Top; See also Forging, Drop)

Ashtabula Bow Socket Co., 99-101 Prospect St., Ashtabula, O.
 Auto Specialties Mfg. Co., St. Joseph, Mich. (See page 463.)
 Bonney Forge & Tool Works, Allentown, Pa.
 Brewer Tichener Corp., Cortland, N. Y.
 Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.
 Columbus Bolt Works Co., Columbus, O. (See page 147.)
 Desoco—See Detroit Socket Co.
 Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Indiana Mould & Machine Works, 1015 S. Council St., Muncie, Ind.
 Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.
 Monarch Carriage Goods Co., Marshall & Spring Grove Ave., Cincinnati, O. (See page 929.)
 Motor Products Corp., 11801 Mack Ave., Detroit, Mich. (See page 757.)
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)

IRONS, Copper Soldering

Motor Products Corporation, 11801 Mack Ave., Detroit, Mich. (See page 757.)

IRONS, Electric Soldering

Ambu—See American Bureau of Engineering.
 American Bureau of Engineering, 1600 S. Michigan Ave., Chicago, Ill. "Ambu." (See page 147.)
 Baco Electric Co., Bode, Ia. "Soderwand."

Clemens Electrical Corp., 725 Main St., Buffalo, N. Y. "J. C."
 Dover Mfg. Co., Dover, O.
 Ever-Hot—See Products Corp.
 General Electric Co., Schenectady, N. Y. (See page 697.)
 J. C.—See Clemens Electrical Corp.
 Products Corp., 51 Lake St., Maywood, Ill. "Ever-Hot."
 Shontz Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (See page 151.)
 Soderwand—See Baco Electric Co.
 Vulcan Electric Heating Co., 107 W. 13th St., New York, N. Y.

IRONS, Slat

(For Bow Sockets—See Sockets, Bow)

Amesbury Brass & Foundry Co., Amesbury, Mass.
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

IRONS, SOLDERING—See Irons, Electric Soldering

IRONS, TIRE—See Tools, Tire

IRONS, TOP—See Irons, Body or Top

JACKS, Car Lifting

(For Wheeled and Two and Four Wheel Lifting Jacks—See Jacks, Special)

APC—See Ashland Products Co.
 Acme—See Spencer's Sons.
 Ajax Auto Parts Co., 15th St. & N. W. Tracks, Racine, Wis. "Rapco."
 Alrite—See Pratt Mfg. Co.
 Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich. "Aro."
 American Accessories Co., Dept. Y., 1480 E. Fort St., Detroit, Mich. "Nojak." (See page 489.)
 American Chain Co., Bridgeport, Conn. "Weed." (See page 329.)
 Aro—See Alsteel Mfg. Co.
 Ashland Products Co., 50 E. Ninth St., Ashland, O. "APC." (See page 487.)
 Atlas Mfg. Co. of Orlando, W. Central Ave., Orlando, Fla.
 Auto Specialties Mfg. Co., St. Joseph, Mich. "Drednaut." (See page 463.)
 Badger—See Walker Mfg. Co.
 Barrett—See Duff Mfg. Co.
 Beacon Bronze Co., Beacon, N. Y. "Super." (See page 486.)
 Black Jack Co., Funk, O.
 Buckeye Jack Mfg. Co., Alliance, O.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for F. W. Mann Co., Milford, Mass. "Kimball.")
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Cleveland Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Cne-Stapley Mfg. Corp., West Haven, Conn. "Peteler." (See page 487.)
 Coryell Jack Co., Turk Blk., Pontiac, Mich.
 Diamond Auto Parts Co., 56 Greenpoint Ave., Brooklyn, N. Y. (See page 489.)
 Drednaut—See Auto Specialties Mfg. Co.
 Duff Mfg. Co., Pittsburgh, Pa. "Barrett." (See page opposite Inside Back Cover.)
 Elite Mfg. Co., Ashland O. "Reliable." (See page 487.)

Everything is listed under the NOUN or principal word



Better Castings at Less Final Cost

Figure your castings cost on the basis of the finished, machined product.

On this basis the use of a percentage of Cicoa Charcoal Iron will actually give you better castings at a reduced final price.

It has been amply proven that the use of Cicoa Charcoal Iron has reduced machining costs from 10 to 20 per cent. This great saving far more than makes up for the slightly higher cost, (a fraction of a cent per pound), of Cicoa Charcoal Iron over ordinary pig iron.

Castings of Cicoa Charcoal Iron are better castings because they are tougher and stronger, the grain is closer, hard spots and sponginess are avoided, and machinability is greatly increased.

We are glad to explain both to foundrymen who make, and others who buy castings, how a small percentage of Cicoa Charcoal Iron will give them a better product at less cost.

The Charcoal Iron Company of America
Union Trust Building Detroit, Michigan

Furnaces at Ashland, Wis.; and Newberry, Manistique and Boyne City, Michigan

You sell castings by the pound. Figure your iron costs the same way. At present pig prices Cicoa Charcoal Iron costs you only .0045 cents per pound more than coke iron. In most mixtures you would not use to exceed 25% of Cicoa Charcoal Iron. This would bring the actual additional cost per pound of finished casting, to only .0011 cents, or practically nothing. As machine shop costs have been reduced in some cases from 10 to 20 per cent, finished Cicoa Charcoal Iron Castings actually cost less than ordinary iron castings.

Cicoa Charcoal Iron

Please mention The Automobile Trade Directory

JACKS, Car Lifting (Continued)

Gemco Mfg. Co., 668 S. Pierce St., Milwaukee, Wis. (See page 167.)
 H-C.—See Lane Bros. Co.
 Handee—See Racine Handy Mfg. Co.
 Hart-Bell Co., 48 S. Water St., Poughkeepsie, N. Y.
 Hartford, Edward V., 35 Warren St., New York, N. Y. "Red Rack." (See page 765.)
 Hi-Lo—See Rowe Calk & Chain Co.
 Indestructo—See Jiffy Jack Co.
 Jaxall—See Sunderman Corp.
 Jiffy Jack Co., 10209 Quincy Ave., Cleveland, O. "Indestructo."
 Joyce-Cridland Co., 333 S. Linden Ave., Dayton, O. "XX Century."
 Kasoo—See National Standard Co.
 Kimball—See Cassidy Co.
 Lane Bros. Co., 48 Prospect St., Poughkeepsie, N. Y. "H-C."
 Leader—See National Standard Co.
 Little Giant—See Pratt Mfg. Co.
 Little Giant—See Spencer's Sons.
 Manco—See Mann Corp.
 Mann Co.—See Cassidy Co.
 Mann Corp., Kankakee, Ill. "Manco."
 Mayer—See Victor Machine Works.
 Memac—See Paulson Mfg. Co.
 Millers Falls Co., Millers Falls, Mass.
 Mobilift—See National Jack Co.
 National—See Pratt Mfg. Co.
 National Jack Co., Gest & Evans Sta., Cincinnati, O. "Mobilift."
 National Standard Co., Eighth & Howard Sts., Niles, Mich. "Kasoo," "Standard," "Leader."
 Nojack—See American Accessories Co.
 Norlund Novelty Co., Williamsport, Pa.
 Oliver-Barth Jack Co., 348 Milwaukee St., Milwaukee, Wis. "Peerless."
 Paulson Mfg. Co., 491 Eddy St., Cleveland, Ohio. "Memac."
 Peerless—See Oliver-Barth Jack Co.
 Peteler—See Coe-Stapley Mfg. Co.
 Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill. "Little Giant," "National," "Alrite."
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Rapco—See Ajax Auto Parts Co.
 Red Rack—See Hartford, Edward V.
 Red Wonder—See Sidel-Rattner Mfg. Co.
 Rees Mfg. Co., 7501 Thomas Blvd., Pittsburgh, Pa. (See page 486.)
 Reliable—See Elite Mfg. Co.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Rowe Calk & Chain Co., Plantsville, Conn. "Hi-Lo."
 Sidel-Rattner Mfg. Co., Bush Terminal, Brooklyn, N. Y. "Red Wonder."
 Simplex—See Templeton, Kenly & Co.
 Spencer's Sons, I. S., Fair St., Guilford, Conn. "Acme," "Little Giant."
 Standard—See National Standard Co.
 Sterling—See Republic Auto Parts Co.
 Sunderman Corp., Newburgh, N. Y. "Jaxall." (See page 191.)
 Super—See Beacon Bronze Co.
 Templeton, Kenly & Co., 1026 S. Central Ave., Chicago, Ill. "Simplex."
 Topping Bros., 132 Chambers St., New York, N. Y.
 Trex—See Trexler Co.
 Trexler Co., 1418 Walnut St., Philadelphia, Pa. "Trex." (See page 467.)

Twinlock Co.—See Trexler Co.
 XX Century—See Joyce-Cridland Co.
 Victor—See Walker Mfg. Co.
 Victor Machine Works, 608 S. Broadway, St. Louis, Mo. "Mayer." (See page 486.)
 Walker Mfg. Co., Racine, Wis. "Badger," "Victor." (See page 485.)
 Weed—See American Chain Co.
 Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.

JACKS, LIFTING, FOR FORDS—See Jacks, Special, for Fords**JACKS, Special**

(Wheeled, Two and Four Wheel Lifting, Tire Beaving, etc.—See also Jacks, Lifting; also Jacks, Tire Beaving)

Arrow-Grip Mfg. Co., Glens Falls, N. Y.
 Block, Jr.—See Zim Mfg. Co.
 Bruhn Mfg. Co., Columbia & 150th Sts., Hammond, Ind.
 Bunnell & Co., 9 S. Clinton St., Chicago, Ill. "Yellow Jack-it."
 Cady—See Moore Co.
 Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)
 E & S—See Manley Mfg. Co.
 Excel—See Randall-Falchney Co.
 Horseshoe—See Minnesota Auto Jack Co.
 Hovey—See Whetstone & Co.
 Jump Jack—See Walker Mfg. Co.
 Kutler Mfg. Co., Byron, O.
 Manley Mfg. Co., York, Pa. "E & S." (See page 661.)
 Marion Walleable Iron Works, Marion, Ind. (See page 221.)
 Mid-West Mfg. Co., McKnight Bldg., Minneapolis, Minn. "Red Devil Dolly."
 Minnesota Auto Jack Co., Providence Bldg., Duluth, Minn. "Horseshoe."
 Moore Co., R. L., 12933 Euclid Ave., Cleveland, O.
 Oliver-Barth Jack Co., 348 Milwaukee St., Milwaukee, Wis.
 Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill.
 Randall-Falchney Co., 76 Atherton St., (Jamaica Plain), Boston, Mass. "Excel."
 Red Devil Dolly—See Mid-West Mfg. Co.
 Rex—See Zim Mfg. Co.
 Roll-a-Car—See Walker Mfg. Co.
 Simplicity Products Mfg. Co., Milwaukee, Wis.
 Steel Truck Co., Howell, Mich.
 Walker Mfg. Co., Racine, Wis. "Roll-a-Car," "Jump Jack." (See page 485.)
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 661.)
 Whetstone Co., John H., Court St., Lapeer, Mich. "Hovey."
 Yellow Jack-it—See Bunnell & Co.
 Zim Mfg. Co., 208 N. Wabash Ave., Chicago, Ill. "Rex," "Block, Jr."

JACKS, Special, for Fords

(Wheeled, Two and Four Wheel Lifting, Etc.)

American—See Service Station Equipment Co.
 Bunnell & Co., 9 S. Clinton St., Chicago, Ill. "Yellow Jack-it."
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)
 Diamond Auto Parts Co., 56 Greenpoint Ave., Brooklyn, N. Y. (See page 489.)

Everything is listed under the NOUN or principal word

WALKER BADGER JACKS

—the complete line

THE WALKER line of automobile jacks is complete. It includes passenger car jacks, truck jacks and garage jacks. For twelve years Walker has specialized in jack building. As a result, Walker Jacks are right. They are built right and work right. And they come to you in easily saleable condition. The passenger car and truck Jacks are finished in the well known Walker Royal Blue and are packed individually in corrugated fibre cartons. The Walker Roll-a-Car—the one-man garage jack—and the Walker Jump Jack are shipped in substantially-built wooden crates. In every way the Walker line is the most desirable and profitable line to handle. These better jacks are stocked in practically every jobbing center in the United States and Canada.



No. 5



No. 06



No. 6



No. 230



No. 265



725



No. 300



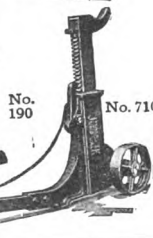
No. 200



No. 310



No. 190



No. 710



No. 55



No. 475



No. 3



No. 1



No. 7

No.	Height Inches	Raise Inches	Capacity Tons	Weight Lbs.
310	10	6	1	5½
7	11	6	1	10
6	11	6	1	12
265	13½	7	6	23
230	11½	7½	3	9½
300	10	6	¾	4½
3	11	6	1	9
1	10	5	¾	6½
5	11½	5½	3	14
55	14½	6¾	5	28
475	13½	7	7½	30
200	9½	6	¾	3¾
190	10½	6½	1	11
06	10	5	¾	3¾

Roll-a-Car No. 725

Roll-a-Car is the most efficient garage jack on wheels. It is easy, quick and sure. One man can lift either end of the heaviest car. The handle can be kept in an upright position, out of the way.

Price, \$41.50
West of Rockies, \$45.00

Jump Jack No. 710

With the Jump Jack you can change a tire in less time than it takes to get the ordinary jack in place. One lifting operation lifts the car amply high to change the largest tire.

Price, \$10.50
West of Rockies, \$12.00.

WALKER MANUFACTURING CO., Racine, Wis.

Please mention The Automobile Trade Directory

The Famous Jack with the Double Worm Gear Drive

**SAFE
POWERFUL
DEPENDABLE**



No.	Capacity	Height Inches	Lift Inches	Weight	List Price Each	West of the Rockies List
1-C	2 Tons	10 1/4	5 1/2	13 lbs.	\$ 9.00	\$ 9.50
5-A	2 1/2 Tons	10 1/4	6	14 lbs.	10.00	10.50
2	5 Tons	10 1/4	6	22 lbs.	16.00	17.00
3-A	6 Tons	12 1/4	8	27 lbs.	20.00	21.00
6-A	6 Tons	14	8	29 lbs.	22.00	23.00
21-A	10 Tons	14 1/4	9	46 lbs.	38.00	40.00

A—Designates Foot Lift.

Nos. 1, 2, 3-A, 5-A, 6-A packed in standard packages of six.

Nos. 21-A in standard packages of three.

Exclusive Manufacturers

REES MANUFACTURING CO.

formerly Iron City Products Co.

7501 Thomas Boulevard

PITTSBURGH

PENNSYLVANIA

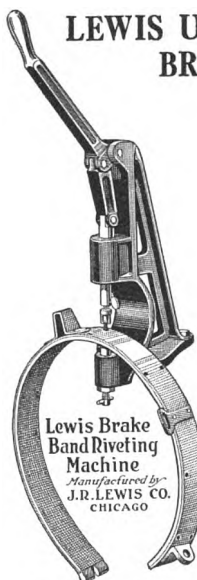
Reg. Trade Mark

REES

LEWIS UNIVERSAL BRAKE BAND RIVETING MACHINE

**For Fords and
and all other
makes of
Cars**

will save more than half the time in cutting out old rivets and replacing brake linings with split rivets. Rivets applied with this machine are well under the surface and will not score the brake drum. Any boy can do the job quickly.



Lewis Brake
Band Riveting
Machine
Manufactured by
J.R. LEWIS CO.
CHICAGO

**Attractive Proposition to Jobbers
Wt. 30 lbs., Price \$27.50**



“SUPER” HYDRAULIC JACKS

A 6-TON TRUCK JACK

A 2-TON AUTO JACK

1. No Worms to Strain
2. No Ratchets to Break
3. No Gears to Strip
4. No Jacking Down

See Your Dealer
If He Is All Out, Write Us

BEACON BRONZE COMPANY

MAKERS OF

“Boronite,” a first class bearing bronze equal to any, but cheap in price. Write for our prices on standard bars and finished bearings.

“TOLONITE” Nos. 1 and 2

No. 1 is a high tensile strength aluminum. No. 2 is a high pressure aluminum. Tolonite is cheaper than common aluminum and is 50% more efficient.

Write us for Prices

BEACON, NEW YORK

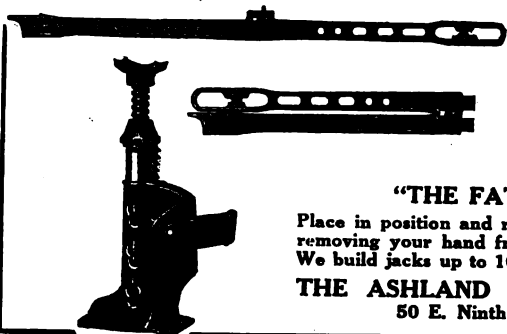
VICTOR MACHINE WORKS

Automobile Jacks

608 South Broadway

St. Louis, Mo.

Please mention The Automobile Trade Directory



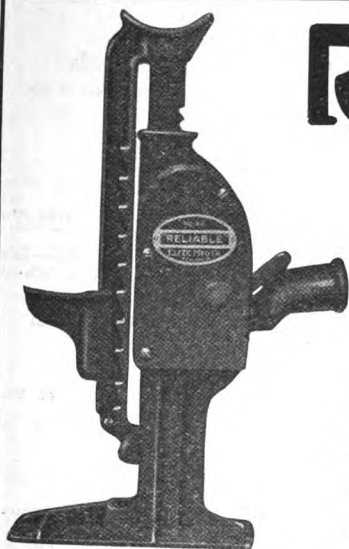
No. 25 APC
Handle Controlled
Combination Ratchet

Positive in action, short stroke,
 easy lift, extension handle.

"THE FAT MAN'S JACK"

Place in position and raise or lower the load without
 removing your hand from the handle.
 We build jacks up to 10-ton capacity.

THE ASHLAND PRODUCTS COMPANY
 50 E. Ninth St., Ashland, Ohio



No. 46 RELIABLE

Weights 10 Lbs. Will Lift 3000 Lbs.
 Height Lowered, 11½" — Height Raised, 17½"

RELIABLE JACKS



A Variety of Sizes—All Reliable

All over the country motorists are becoming more
 and more acquainted with Reliable Jacks. A
 variety of sizes; a type for every size motor car
 increases the demand for them.

Reliable Jack customers are satisfied customers.
 Satisfied customers mean repeated patronage.

Ask your jobber or write for information.

Elite Manufacturing Co.
 Ashland, Ohio

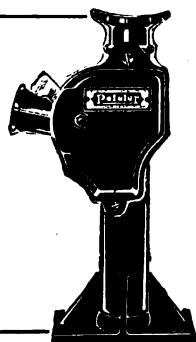


COE-STAPLEY

Auto Pumps & Jacks

A complete line at the right price with selling
 features that mean easy sales and satisfied cus-
 tomers.

Coe-Stapley Manufacturing Corporation
 West Haven, Conn.



Please mention The Automobile Trade Directory

JACKS, Special, for Fords (Continued)

Garage Equipment Co., 241 Fourth Ave., S., Minneapolis, Minn.
 Marion Malleable Iron Works, Marion, Ind. (See page 221.)
 Moore Co., R. L., 12983 Euclid Ave., Cleveland, O.
 Oliver-Barth Jack Co., 348 Milwaukee, Wis. "Peerless."
 Peerless—See Oliver-Barth Jack Co.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Sterling—See Republic Auto Parts Co.
 Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."
 Yellow Jack-it—See Bunnell & Co.

JACKS, Tire Lifting

(Small jack for lifting the tire or rim off of wheel.)

G. & W. Electric Specialty Co., 7440-52 S. Chicago Ave., Chicago, Ill.

JACKS, Tire Saving

(For holding car off the floor when not in use; For Two and Four Wheel Lifting Jacks—See Jacks, Special)

APC—See Ashland Products Co.

Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich.

Ashland Mfg. Co., Ashland, O. "Eureka."

Ashland Products Co., 50 E. Ninth St., Ashland, O. "APC." (See page 487.)

Beard Auto Lift Co., 718 Vanburen St., Auburn, Ind.

Brodrick Bros., 59 Congress St., Hartford, Conn.

Buck, Monroe, Glens Falls, N. Y.

Buffington & Co., C. A., Berkshire, N. Y.

Bull Dog—See Toledo Cable Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.

Elite Mfg. Co., Ashland, O. "Reliable." (See page 487.)

Eureka—See Ashland Mfg. Co.

Gemco Mfg. Co., 686 S. Pierce St., Milwaukee, Wis. (See page 107.)

Hall Air Lock & Railway Supply Co., Oakville, Ia.

Hoco—See Hoeft & Co.

Hoeft & Co., 400 N. Ashland Ave., Chicago, Ill. "Hoco."

Indestructo—See Jiffy Jack Co.

Jiffy Jack Co., 10209 Quincy Ave., Cleveland, O. "Indestructo."

M. B.—See Metzsig Bros.

Metzsig Bros., 321 Broadway St., Berlin, Wis. "M. B."

Mobilift—See National Jack Co.

Moore—See Walker Mfg. Co.

National Jack Co., Gest & Evans Sts., Cincinnati, O. "Mobilift."

National Standard Co., Eighth & Howard Sts., Niles, Mich. "Standard."

Oliver-Barth Jack Co., 348 Milwaukee St., Milwaukee, Wis.

Oshkosh Auto Jack Mfg. Co.—See Oshkosh Auto Specialties Co.

Oshkosh Auto Specialties Co., 24 Washington St., Oshkosh, Wis. (Distributors for Oshkosh Auto Jack Mfg. Co., Oshkosh, Wis.)

Perfect—See Pratt Mfg. Co.

Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill. "Perfect."

Racine—See Walker Mfg. Co.

Reliable—See Elite Mfg. Co.

S. & S. Automatic Tirease Co., Marysville, Kans.

Sedgwick Mfg. Co., Third & Chestnut Sts., Richmond, Ind.

Springville Wood Specialty Co., Springville, N. Y.

Standard—See National Standard Co.

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 759.)

Toledo Cable Co., 1085 Grand Ave., Toledo, O. "Bull Dog."

U. S. Mfg. Co., Mansfield, O. "Unique."

Unique—See U. S. Mfg. Co.

Walker Mfg. Co., Racine, Wis. "Moore," "Racine." (See page 485.)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.

(See page 471.)

Wilbur Lumber Co., Honey Creek, Wis.

Will-Burt Co., Orrville, O.

JACKS, Tire Saving, for Fords

(For holding car off the floor when not in use)

Beard Auto Lift Co., 718 Vanburen St., Auburn, Ind.

Exy-Up—See Star Specialty Mfg. Co.

M. B.—See Metzsig Bros.

Metzsig Bros., 321 Broadway St., Berlin, Wis. "M. B."

Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "Exy-Up." (See page 759.)

JACKS, TRUCK WHEEL REMOVING—See Cranes, Drags and Jacks, Truck Wheel Removing

JACKS, WHEELED—See Jacks, Special

JARS, Rubber Battery

American Hard Rubber Co., 11 Mercer St., New York, N. Y. "Vulcan," "Mercury."

Brunswick-Balke-Collender Co., 623-33 S. Wabash Ave., Chicago, Ill.

Cooper—See Giant Tire & Rubber Co.

Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O. "Cooper."

Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.

Mercury—See American Hard Rubber Co.

Rub-Tex Products, Inc., Indianapolis, Ind.

Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

United States Rubber Co., 1790 Broadway, New York, N. Y.

Vulcan—See American Hard Rubber Co.

JIGS—See Dies, Jigs, Tools and Fixtures

JIGS, BABBITTING—See Jigs, Main Bearing Connecting Rod Babbitting

JIGS, Brake Band Riveting, for Fords

(For Brake Band Riveting Machines—See Machines, Brake Band Riveting)

Continental Auto Parts Co., 2207 E. 17th Columbus, Ind. (See page 661.)

Hunt Mfg. Co., Geo. L., 1030 Wisconsin Ave., Boscobel, Wis.

Jiffy—See Hunt Mfg. Co.

Lewis Co., J. R., Chicago, Ill. (See page 486.)

Universal Tool Co., Garwood, N. J. "Utco." (See page 433.)

Utco—See Universal Tool Co.

Everything is listed under the NOUN or principal word



To jack up a wheel for tire changing you insert the two studs of the Nojak into corresponding holes in the felloe of the wheel—then drive car ahead until wheel rises and rests on the Nojak as shown above. Easy! Saves clothes, time, work and temper. Sizes for any car or light truck. Endorsed by engineers and fully guaranteed.

Power-Jack Has 4 Uses

FIRST—it is a jack as described above. **Second**—if left on a rear wheel it acts as a mud-hook, sand-hook or snow-hook. **Third**—it helps put chains on quickly. **Fourth**—it is carried as a guard over spare tire. Dealers and Jobbers write us or—

DISTRIBUTORS

James Wright Wilson, Incorporated, 1819 Broadway, New York City (Pennsylvania, New Jersey, New York and New England States). Frank White Co., Edwards, Miss. (Texas, Louisiana, Mississippi, Alabama and Tennessee). Pacific Auto Specialty Co., 1155 South Olive St., Los Angeles, Cal. (Pacific Coast States). Wallace-Holmes Co., 118 Victoria Road, Walkerville, Ontario, Canada (Dominion of Canada). Powell-Kenney Motors Co., 1241-50 Lincoln St., Denver, Colo. (Colorado).

NOJAK

YOUR MOTOR DOES IT

American Accessories Co.
Dept. Y, 1489 East Fort, Detroit

DIAMOND

"The Ace of Jacks"



Diamond Jacks are marvels of strength, wearing qualities and easy application; they are good for a life time of the hardest work, safe, simple in construction, with nothing to break or wear out in long continued service.

Built

of the highest grade materials, Diamond Jacks appeal to the dealer handling quality accessories. Diamond Jacks move from the shelves quickly; there is no come-back, only satisfaction and profit.

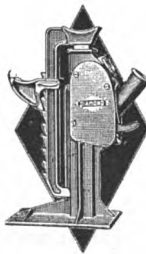
for

jobbers and dealers Diamond Jacks make an exceedingly profitable item. The larger Diamond Jacks are packed in individual cartons, labeled with our guarantee. Every buyer is protected by our guarantee and that protection, together with the quality of the product, makes Diamond Jacks the most profitable jacks on the market.

Service

is what the buyer expects, in a jack as in everything else. Diamond Jacks are speedy. The rack bar is of highest quality steel, with uniform teeth. Lifting pawls are of highest grade malleable and all parts are accurately machined in jigs.

**Each Jack Fully
Guaranteed**



DIAMOND AUTO PARTS CO.

56 Greenpoint Avenue

Brooklyn, N. Y.

Please mention The Automobile Trade Directory

JIGS, Connecting Rod Aligning

Hinckley-Myers Co., Water St., Jackson, Mich.

JIGS, Connecting Rod Aligning, for Fords

American—See Service Station Equipment Co. Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."

Bean—See Liberty Metal Products Co.

Brodrick Bros., 59 Congress St., Hartford, Conn.

Buckwalter Co., John S., 413-15 N. Mary St., Lancaster, Pa. (See page 343.)

Carswell-Hammond Mfg. Co.—See Zinke Co.

Clement Machine Shop, 301 W. 68th St., New York, N. Y.

Damon & Glenn, 189 High St., Boston, Mass.

Danielson Tool Co., Fulton St., Wausau, Wis.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)

Dee Tool Co., John, 1511 Third Ave., Rock Island, Ill.

Detroit Garage Equipment Co., 38 Hendrie St., Detroit, Mich.

Dyer Co., 155 Brookline St., Cambridge, Mass. "Fort Hill."

Eagle Machine Co., 34 N. Noble St., Indianapolis, Ind.

Fort Hill—See Dyer Co.

Garage Equipment Co., 241 Fourth Ave., S., Minneapolis, Minn.

H. & H. Machine Co., 4274 Easton Ave., St. Louis, Mo.

Hinckley-Myers Co., Water St., Jackson, Mich.

Lewis Tool Co., 612 Fifth Ave., S., Minneapolis, Minn.

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

Littell Machinery Co., 532-34 Washington St., Spokane, Wash.

Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich.

Moore Engineering Co., Penna. Ave., & W. M. R. R., Hagerstown, Md.

Nazett Mfg. Co., 1440 Washington St., Eldora, Ia.

Phoenix Mfg. Co., North Side, Eau Claire, Wis.

Peoria—See Auto Mechanics Tool Co.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."

Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."

Storm Mfg. Co., Dept. L., Minneapolis, Minn.

Tribune Engineering Co., Front St., Owego, N. Y.

Wisconsin Welding & Cutting Co., 413 Sixth St., Milwaukee, Wis. (See page 821.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.)

JIGS, DRIVE SHAFT BUSHING REAMING, FOR FORDS—See Reamers, Drive Shaft Bushing**JIGS, Main Bearing and Connecting Rod Babbitting**

Bremer Co., O. B., 222 Division St., Burlington, Iowa.

JIGS, Main Bearing and Connecting Rod Babbitting, for Fords

Bremer Co., O. B., 222 Division St., Burlington, Iowa.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

C. M. & D.—See Chicago Mfg. & Distributing Co.

Danielson Tool Co., Fulton St., Wausau, Wis.

Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo.) (See pages 491 to 494.)

Hanten Machine Co., Watertown, S. Dak.

Hempy-Cooper Mfg. Co.—See Fairbanks Co.

Honn, Peter, 629 Fairview Ave., Grand Rapids, Mich.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Splash Oiler Co., 913 E. Washington St., Indianapolis, Ind.

Storm Mfg. Co., Minneapolis, Minn.

Tribune Engineering Co., Front St., Owego, N. Y.

Universal Tool Co., Garwood, N. J. "Uteco." (See page 433.)

Uteco—See Universal Tool Co.

JIGS, Piston Aligning

American Engine & Airplane Co., 2869 W. Pico St., Los Angeles, Cal. (See page 635.)

Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)

Littell Machinery Co., 532-34 Washington St., Spokane, Wash.

Peyer, John, 301 W. 68th St., New York, N. Y.

Shepard-Thomason Co., 506-08 W. Pico St., Los Angeles, Cal. "Thomason." (See page 629.)

Thomason—See Shepard-Thomason Co.

Wilkie's Machine Works, 208 W. Third St., Winona, Minn.

JIGS, Piston Aligning for Fords

Dearborn Equipment Co., Elizabeth, N. J. (See page 441.)

JIGS, Triple Gear Riveting for Fords

Hinckley-Myers Co., Water St., Jackson, Mich.

Miles Mfg. Co.—See Zinke Co.

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Miles Mfg. Co., Newton, Ia.)

JIGS, VALVE END SQUARING—See Blocks, Valve End Squaring**JOBBER AND SUPPLY DEALERS**

(Covering only Jobbers and Dealers in Automobile Supplies who advertise in this publication)

Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (See page 337.)

Beckley-Ralston Co., Michigan Blvd. & 18th St., Chicago, Ill. (See page 498.)

Everything is listed under the NOUN or principal word

FAIRBANKS

Automobile Repair Equipment



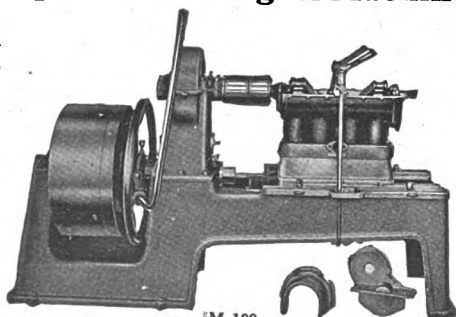
Fairbanks' Worth

Automobile repairing has developed to such an extent that modern and efficient tools are absolutely essential in the up-to-date repair shop. New tools and devices, well designed, and offering guaranteed service, mean repeat orders for the dealer and satisfied customers for the repair man. In these pages you will find some of the popular items in the Fairbanks line—a line which is recognized as the standard throughout the world.

And the Fairbanks line is progressive. It is being increased constantly. The new devices have been tested and approved by experts and when they put their "O. K." on a product, the Fairbanks Company is willing to guarantee it as a real time and labor saver, with its own well-known "O. K."

The Ford and Fordson Special Burning-In Machine

The Ford and Fordson Special Burning-in and Running-in machine is built to stand the test of time and hard usage. A base of one solid casting, a low center of gravity, split bronze bearings and Hyatt roller bearings are all features which insure a satisfactory job.



By means of a $3\frac{1}{2}$ to 1 gear reduction the bearings may be burned-in at a speed of 175 R. P. M., while the speed for running-in with oil is increased to 600 R. P. M. Experiments and tests have proved that these are the best speeds for perfect work.

One of the main advantages of the Ford and Fordson Special is the fact that the repair man has full view of the operation while the main and connecting rod bearings are being burned-in. After this is completed the motor block is turned and the bearings, connecting rods and pistons are run-in with oil.

STANDARD OF THE WORLD



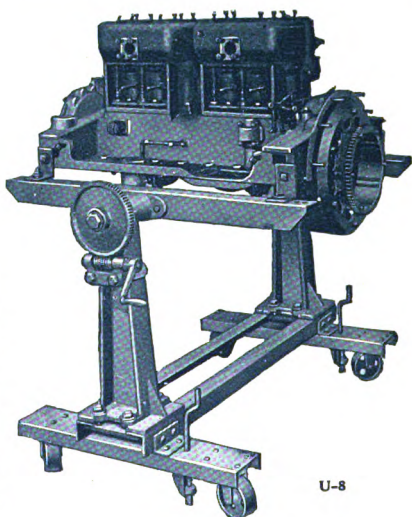
FAIRBANKS

Automobile Repair Equipment

Universal Motor Stand

The Fairbanks Universal Motor Stand handles motor blocks of any type with ease. The blocks may be adjusted to any position and secured in that position.

The Universal Motor Stand is made to take all sizes or makes of auto and auto-truck motor blocks, having either three point or four point suspension. The leg brackets move in and out to increase or decrease the distance to fit any motor. The stand is fitted with worm wheel drive, making it possible to place the motor in any required position. It is substantially constructed of angle iron and well riveted throughout. Cast iron brackets support the side members. Four casters permit the stand to be moved easily to position desired, and two lock screws elevate the corners.



U-8

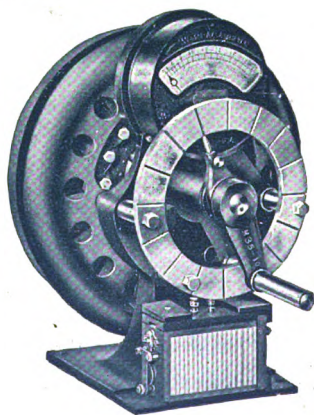
Coil Unit and Magneto Test Stand

The Coil Unit and Magneto Test Stand (M-35) is designed to test and facilitate the adjustment of the coil units and the magneto. It consists of a coil testing apparatus which is a two ampere model, 156 ammeter, a Ford magneto provided with a crank and rotating spark gap, and a device for clamping the coil unit in place and at the same time making the necessary electrical connections. For this test the magneto ammeter and primary of the coil unit are connected in series. The coil secondary is connected across the rotary spark coil.

When the magneto is revolved the ammeter shows the primary current flowing. Seven-eighths of the number of sparks produced by the passage of the magneto poles in front of the coils per one-sixteenth of a revolution may be counted by watching the rotating spark gap as it passes over the graduated dial. This dial is graduated into 16 parts, the magneto having 16 poles. One good spark should pass over each one-sixteenth revolution of the crank and the current indicated by the ammeter should be between 1.2 and 1.4 amperes.

To test the magneto in the car, one terminal of the ammeter is connected to the magneto terminal through an impedance coil and the other terminal is connected to the crank case. With the impedance coil used the meter should indicate 0.8 or more amperes when the engine runs at a moderate speed.

The function of the impedance coil is to cause the indications of the instrument to be substantially independent of the engine speed.

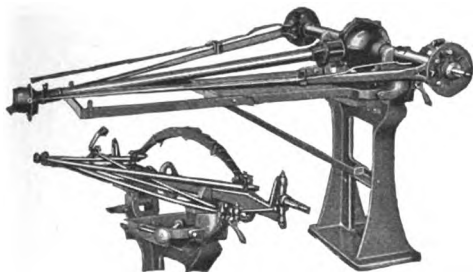


M-35

STANDARD OF THE WORLD

FAIRBANKS

Automobile Repair Equipment



M-14

Dixie Combination Front and Rear Axle Stand

The Dixie is a well-designed device for supporting the front and rear axle while overhauling. This stand is equipped with two vises, one tipping to the side to make the axle housing accessible for the removal of the roller bearing sleeve, and the other turning on a spindle to permit the easy removal of

the differential and axle shaft. A heavy cast iron removable grease pan is provided to catch the grease and oil from the disassembled differential.

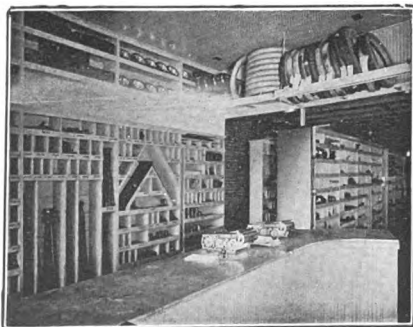
The Dixie Stand has proved very efficient in repair shops. The rear axle can be placed in any position, and the tool tray and axle shaft support can be neatly folded when not in use and can be left until the entire operation is complete.

Make Your Stock Room a Display Room

Fairbanks Servistock units are made in sizes to hold parts stocks of \$5,000, \$25,000 and \$50,000, with supplements for truck and tractor parts.

The bins bear the numbers of parts contained therein and are arranged in numerical order, irrespective of the size or shape of the part.

The Servistock Units can be supplied in either wood or steel. Either style will add to the attractiveness and pulling power of any Service Station, and at the same time will save labor. Everything is at the finger tips of the salesman and in sight of the customer. This system is also an excellent indicator of stock depletion.



S-1 TO S-7

STANDARD OF THE WORLD



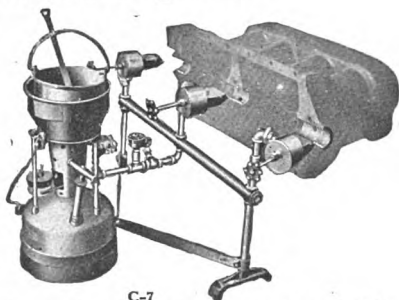
FAIRBANKS

Automobile Repair Equipment

Save Time and Labor on Rebabbitting Jobs

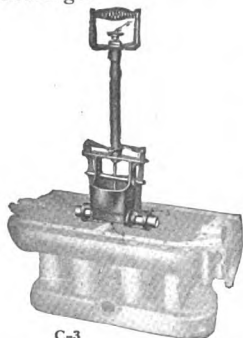
Your profits increase as your time and labor decrease. We can show you how to save time and labor on rebabbitting jobs.

First you must remove the old babbitt from the block. This is easily accomplished with the four way torch, which melts and removes the old bearings and at the same time melts the babbitt for the new bearings.



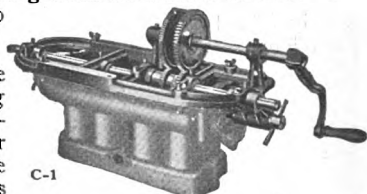
C-7

Next fill the ladle-jig with the molten babbitt. Place it over the bearing and give the handle a quarter turn to give it its exact position. Then lift the plunger in the handle and the hot metal will flow into the bearing from both sides at once—the correct way to do it.



C-3

Now place the Bearing Boring Machine in position on the motor block and bore the bearings. This



C-1

machine bores all three bearings at one time, insuring accurate alignment and a perfect fit of the crankshaft. Simple, isn't it? That is characteristic of all Fairbanks Repair Equipment.

Watch for the "Fairbanks O. K." on all repair equipment.

EXCLUSIVE SALES AGENTS

THE FAIRBANKS COMPANY

Administrative Offices—NEW YORK

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Baltimore
Birmingham
Boston
Bridgeport
Buffalo

London, Eng.
Kingston, Jamaica

Chicago
Cleveland
Detroit
Hartford
Newark
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New York
Paterson
Philadelphia
Pittsburgh
Providence
Rochester

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Paris, France

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St. Louis
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Tulsa
Utica
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Glasgow, Scotland
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STANDARD OF THE WORLD

PARTS FOR ANY CAR

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AUTOMOBILE PARTS AND SUPPLIES
AUTO TIRES AND TUBES A SPECIALTY

Largest Car Wreckers in the World—We Pay Cash for Junk Cars

1915-31 S. State Street

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SAINT JOSEPH, MISSOURI, U. S. A.

MANUFACTURERS

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JOBBER

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IMPORTERS

New Jersey
Distributors for

J. M. Products**Apco Shock Absorbers****Lowell Vulcanizer****Gates Vulco Line**

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SHOP EQUIPMENT

ECONOMY AUTO SUPPLY CO., Inc.*"Always On The Go"*

268 Halsey St., NEWARK, N. J.

Automotive Equipment and Supplies

Vesta Storage Batteries

Schebler Carburetors

Eisemann Magnetos

K-W Magnetos

Hartford Shock Absorbers

Gray & Davis Starters

Magnetos, Coils and Storage Batteries Repaired

Prompt and satisfactory service.

Wholesale only.

REINHARD BROTHERS COMPANY

11-13 South Ninth Street
 MINNEAPOLIS, MINN.

Please mention The Automobile Trade Directory

JOBBER AND SUPPLY DEALERS (Continued)

Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (See page 495.)
Electric Appliance Co., Chicago, Ill. (See page 47.)
Mersick & Co., C. S., 274-92 State St., New Haven, Conn. (See page 893.)
Reinhard Bros. Co., 11-13 S. Ninth St., Minneapolis, Minn. (See page 495.)
U. S. Surplus Stock Co., 758 W. Jackson Blvd., Chicago, Ill. (See page 511.)
Warshawsky & Co., 1915-31 S. State St., Chicago, Ill. (See page 495.)
Wyeth Hardware & Mfg. Co., St. Joseph, Mo. (See page 495.)

JOINT BOOTS—See Boots, Steering Knuckle

JOINT DISCS—See Discs, Universal Joint

JOINTS, Ball

(For spark and throttle connections)

Birchwood Co., C. W., 718 Dellwood Ave., Jacksonville, Fla.
Chicago Screw Co., Homan Ave., & Fillmore St., Chicago, Ill. "Security." (See pages 498 and 743.)
Cincinnati Ball Crank Co., Cincinnati, O. (See page 498.)
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
Greer, Frederic, 2437 Michigan Ave., Chicago, Ill.
Mechanical & Electrical Mfg. Co., 2227 Prairie Ave., Chicago, Ill. "Memco."
Memco—See Mechanical & Electrical Mfg. Co.
Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)
Peninsular Products Co., Detroit, Mich. (See page 629.)
Porter & Co., W. S., 141-43 W. Austin Ave., Chicago, Ill.
Security—See Chicago Screw Co.
Shaw Mfg. Co., 1 Columbia St., Lynn, Mass. (See page 367.)
Smith Mfg. Co., F. H., 3037-47 Carroll Ave., Chicago, Ill.

JOINTS, Speedometer Swivel

F. W. S.—See Stewart Mfg. Corp.
Meikle Mfg. Co., Eighth & Princeton Sts., Springfield, Ill. "Springfield." (See page 547.)
Ogden Mfg. Co., Plymouth, Ind.
Saco—See Speedometer Accessories.
Speedometer Accessories, Plymouth, Ind. "Saco."
Springfield—See Meikle Mfg. Co.
Stewart Mfg. Corp., F. W., 345 W. Austin Ave., Chicago, Ill. "F. W. S."
Swivel Joint & Shaft Co., Plymouth, Ind., (See page 751.)

JOINTS, Universal

(For complete drive shaft assemblies—See Shafts, Propeller; for Flexible Couplings—See Couplings, Flexible Shaft)

A. B.—See Easton Machine Co.
Adell Mfg. Co., Orange, Mass.

Alexander & Cox Co., 2358 Ogden Ave., Chicago, Ill.
American—See H. S. & S. Mfg. Co.
Arvac Mfg. Co., Anderson, Ind. (See page 499.)
Automotive Products Co., Kresge Bldg., Detroit, Mich. (Sole Distributors for Peters Machine & Mfg. Co., Cleveland, O.)
BBB—See Blood-Brothers Machine Co.
Baush Machine Tool Co., 156 Wason Ave., Springfield, Mass.
Bender Mfg. Co., 539 W. Front St., Plainfield, N. J.
Blood-Brothers Machine Co., Allegan, Mich. "BBB." (See page 499.)
C. A. S. Engineering Co., 4210 Woodward Ave., Detroit, Mich. (Sole Distributors for Mechanics Machine Co., Rockford, Ill. "S. A. F. E.")
Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
Chilton Universal Joint, Walnut St., Keyport, N. J.
Cooper Flexible Transmission Co., Eighth Ave. & 18th St., Brooklyn, N. Y.
Detroit—See Universal Products Co.
Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
Easton Machine Co., Central St., South Easton, Mass. "A. B."
Ev-R-Greезд—See Noyes-Richards Engineering Co.
H. S. & S. Mfg. Co., 308 Pearl St., Hartford, Conn. "American."
Hardy—See Thermoid Rubber Co.
Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn. "K-B."
K-B—See Hartford Automotive Parts Co.
M. & E.—See Merchant & Evans Co.
Mechanics Machine Co., Ninth St. & 19th Ave., Rockford, Ill. "S. A. F. E."
Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M. & E."
Mutual Machine Co., 25 Wells St., Hartford, Conn. "Warrens."
Noyes-Richards Engineering Co., 857 Commonwealth Ave., Boston, Mass. "Ev-R-Greезд."
Norwalk Auto Parts Co., Norwalk, O.
Peters Machine & Mfg. Co.—See Automotive Products Co.
Pick Co., Carl, West Bend, Wis. (See page 499.)
R-S Mfg. Co., Dayton, O. "Ream."
Ream—See R-S Mfg. Co.
Rockford Drilling Machine Co., ft. Catherine St., Rockford, Ill.
S. A. F. E.—See Mechanics Machine Co.
Shaw Mfg. Co., 1 Columbia St., Lynn, Mass. (See page 367.)
Snead & Co., Jersey City, N. J. (See page 327.)
Spicer Mfg. Corp., South Plainfield, N. J. (See page 497.)
Thermoid Rubber Co., Trenton, N. J. "Hardy." (See page 531.)
Universal Machine Co., Bowling Green, O.
Universal Products Co., 458 E. Woodbridge St., Detroit, Mich. "Detroit."
Warrens—See Mutual Machine Co.

JUTE WEBBING—See Webbing, Jute and Cotton

KEROSENE ATTACHMENTS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake, for Fords

KEROSENE BURNERS—See Burners, Gasoline and Kerosene

Everything is listed under the NOUN or principal word

SALISBURY



Axles for Passenger Cars

Sheldon



Axles for Motor Trucks

Parish

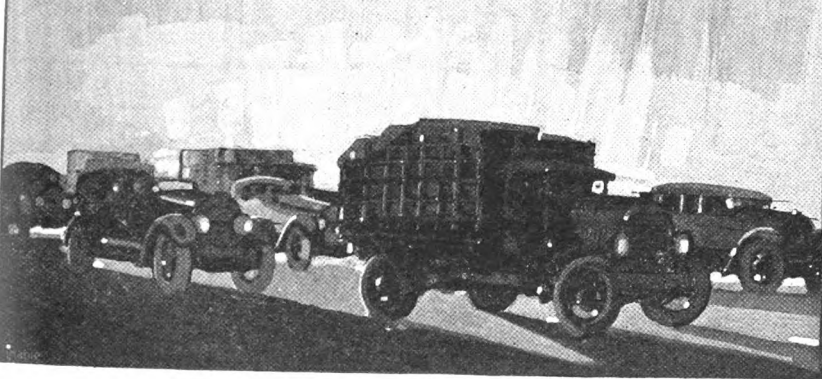


Heat Treated Frame

Spicer



Propeller Shaft



Salisbury Axle Co. Jamestown N.Y.
Sheldon Axle & Spring Co. Wilkes Barre Pa.
Parish Mfg. Corp. Reading Pa. & Detroit Mich.

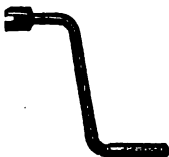
SPICER MFG. CORPORATION
 SOUTH PLAINFIELD NEW JERSEY

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Starting Cranks

For all types of
motors

Revolving grip
without open joints or
projections

**Radius Rods**

For light trucks

Ball Joints

Rattle proof spark and throttle
connections

Torque Hanger

Spring Socket Assembly

Tie Rods

Keep front axle assembly tight

Drag Links

All types of safe steering
connecting rods

BALCRANK

Bumper

All cars, protection, appearance,
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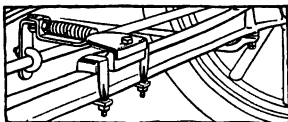
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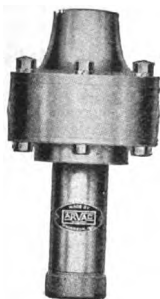
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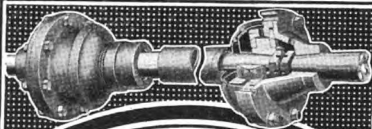
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KEROSENE ENGINES—See Engines, Kerosene

KEROSENE FURNACES—See Torches, Kerosene

KEROSENE HEATERS—See Heaters, Mixture; also Manifolds, Intake for Fords

KEROSENE MANIFOLDS FOR FORDS—See Manifolds, Intake

KEROSENE MOTORS—See Engines, Motor Boat Kerosene

KEROSENE SYSTEMS—See Carburetors, Kerosene; also Heaters, Mixture; also Manifolds, Intake, for Fords

KEROSENE TORCHES—See Torches, Kerosene

KEYS, Acetylene Gas Tank

Buffum Tool Co., Louisiana, Mo.
(See page 883.)

Mossberg Co., Frank, Attleboro, Mass.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
(See page 471.)

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

KEYS, Machine

Dyett Co., Frank J., Ilion, N. Y.

Leard Co., William, New Brighton, Pa.
(See page 297.)

Moltrup Steel Products Co., Beaver Falls, Pa. (See page 821.)

Pennsylvania Shafting Co., Spring City, Pa.
Standard Gauge Steel Co., Beaver Falls, Pa. (See page 247.)

Whitney Mfg. Co., Hartford, Conn.
(See page 227.)

KEYS, SPLIT—See Pins, Cotter

KEYS, Switch, for Fords

Bayne Mfg. Co., Bushnell, Ill.
(See page 149.)

Handy-Dandy—See Relax Co.

Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 247.)

J & B Mfg Co., Pittsfield, Mass.

Relax Co., Norwood, O. "Handy-Dandy."

Standard Motor Products Co., 81 Tenth St., Long Island City, N. Y.

KEYS, TANK—See Keys, Acetylene Tank

KEYS, VALVE STEM, FOR FORDS—See Pins, Valve Stem

KITS, FIRST AID—See Cases, Medical Emergency

KITS, Tire Repair

(See also Cement, Tire; also Patches, Tire; also Plugs, Tire; also Sleeves, Tire)

Blue Ribbon—See International Metal Polish Co.

Cooper—See Giant Tire & Rubber Co.

E-Fec-Tiv—See Permatite Mfg. Co.

General Tire & Rubber Co., East Market St., Akron, O.

Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O. "Cooper."

Goodrich Co., B. F. S. Main St., Akron, O.

Goodyear Tire & Rubber Co., Akron, O.

Hite Mfg. Co., 833-35 Missionary Ave., Chattanooga, Tenn. "S-O-S."

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

Michelin Tire Co., Milltown, N. J.

Page-Lester Co., 2644 Indiana Ave., Chicago, Ill. "Tite-Wad."

Perma-Loc Mfg. Co., Wilkes-Barre, Pa.
(See page 623.)

Permatite Mfg. Co., 21 Fifth Ave., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Pioneer Rubber Products Co., Michigan Ave. & Kansas St., St. Louis, Mo. "Ti-Re-Pair."

S-O-S—See Hite Mfg. Co.

Sampson—See Stevens & Co.

Spreckles-Savage Tire Co., Main & Sicard Sts., San Diego, Cal.

Stevens & Co., 875 Broadway, New York, N. Y. "Sampson." (See page 197.)

Swanson Supply Co., 2124 Westlake Ave., Seattle, Wash.

Ti-Re-Pair—See Pioneer Rubber Products Co.

Tite-Wad—See Page-Lester Co.

KITS, Tool

(For Tool Bags—See Bags, Tool)

Becco—See Michigan Motor Specialties Co.

C. T. K.—See Chicago Tool & Kit Mfg. Co.

Channon Co., H., 160 N. Market St., Chicago, Ill. "Rival."

Chicago Tool & Kit Mfg. Co., 12 N. Market St., Chicago, Ill. "C. T. K."

Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 673.)

Cushman Co., Inc., Champaign, Ill.
(See page 887.)

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Herbrand Co., 109-25 E. State St., Fremont, O.

Imperial Tool & Mfg. Co., 35 S. Desplaines St., Chicago, Ill. (See page 503.)

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

National—See Whitaker Mfg. Co.

Pomo—See Whitaker Mfg. Co.

Rival—See Channon Co.

Sterling—See Whitaker Mfg. Co.

Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y.

Vlchek Tool Co., 3000 E. 87th St., Cleveland, O.

Whitaker Mfg. Co., Chicago, Ill. "National," "Sterling," "Pomo."
(See page 311.)

Everything is listed under the NOUN or principal word

KITS, Tool, for Fords

C. T. K.—See Chicago Tool & Kit Mfg. Co.
 Chicago Tool & Kit Mfg. Co., 12 N. Market
 St., Chicago, Ill. "C. T. K."
 Corcoran Mfg. Co., Section & Foraker Aves.,
 (Norwood), Cincinnati, O. "Peerless."
 Imperial Tool & Mfg. Co., 35 S. Desplaines
 St., Chicago, Ill. (See page 503.)
 Peerless—See Corcoran Mfg. Co.
 Vichet Tool Co., 3000 E. 37th St., Cleveland, O.

KNEE SHIELDS—See Shields, Motorcycle
 Knee

KNIVES, TIRE—See Knives, Tire Repair

KNIVES, Tire Repair

Hyde Mfg. Co., Eastford Rd., Southbridge,
 Mass.
 Security Tool Works, Jackson Blvd., Chicago,
 Ill.
 Sunbeam Mfg. Co., Polson Bldg., Seattle,
 Wash.

KNOCKOUT PUNCHES—See Punches,
 Center, Prick and Drift

KNUCKLE BOOTS—See Boots, Steering
 Knuckle

KNUCKLE CASES—See Boots, Steering
 Knuckle

KNUCKLES, STEERING—See Axles, Front;
 also Forgings

LACE, FABRIC—See Lacing, Fabric

LACE, LEATHER—See Leather, Rawhide
 Lace

LACE, WEBBING and CORD, Coach

(See also Trimmings, Cloth and Carpet)

Bridgeport Coach Lace Co., 813 Wood
 Ave., Bridgeport, Conn. (See page 305.)
 Columbia—See Horstmann Co.
 Horstmann Co., Wm. H., Fifth & Cherry Sts.,
 Philadelphia, Pa. "Columbia."
 Schlegal Mfg. Co., 277 N. Goodman St., Roches-
 ter, N. Y.

LACING, BELT—See Lacing, Fabric; also
 Leather, Rawhide Lace

LACING, BONNET—See Lacing, Fabric;
 also Leather, Rawhide Lace

LACING, Fabric Radiator

(For preventing motor hoods or bonnets from rattling)

American Mills Co., 39 W. 19th St., New York,
 N. Y.
 Bond Co., Charles, 617 Arch St., Philadelphia,
 Pa. "Fabritez."
 Dafoe-Eustice Co., 4042 W. Jefferson Ave.,
 Detroit, Mich. "Deco." "Ustus."
 Deco—See Dafoe-Eustice Co.
 Fabritez—See Bond Co.
 Gelsel Co., Otto E., 3200-06 Oxford St., Phila-
 delphia, Pa.
 Gilmer Co., L. H., Philadelphia, Pa.
 (See pages 116 and 117.)

Hide Leather & Belting Co., 233 S. Meridian
 St., Indianapolis, Ind.

Jaleau—See Uniform Hood Lace Co.

McElroy Belting & Hose Co., 276-300 Truman
 St., Hammond, Ind. "Rubberite."

Mikesell Brothers Company, 156 N. La
 Salle St., Chicago, Ill. (See page 530.)

Modern Belt & Web Co., Emerson Tower
 Bldg., Baltimore, Md.

Multibestos Co., Walpole, Mass.
 (See page 527.)

Powers Mfg. Co., Waterloo, Ia.
 (See page 530.)

Rochester Woven Belting Corp., Commercial
 St., Rochester, N. Y. "Tuftex."

Rosendale—Reddaway Belting & Hose Co.,
 39 W. 19th St., New York, N. Y.

Rubberite—See McElroy Belting & Hose Co.

Smith Belting Co., Manning J., 39 E. Ash-
 mead St. (Germantown), Philadelphia,
 Pa. (See page 115.)

Sutherland Leather & Felt Co., 139 Beaubien
 St., Detroit, Mich.

Tuftex—See Rochester Woven Belting Corp.

Uniform Hood Lace Co., 1609 College Ave.,
 Indianapolis, Ind. "Jaleau."

Ustus—See Dafoe-Eustice Co.

LACING, HOOD—See Lacing, Fabric
 Radiator; also Leather, Rawhide Lace

LACING, LEATHER RADIATOR—See
 Leather, Rawhide Lace

LACQUERS, CELLULOID—See Cleaners,
 Celluloid

LACQUERS, LAMP—See Enamels, Brass;
 also Lacquers, Metal

LACQUERS, Metal

American Lacquer Co., Bridgeport, Conn.
 Barrett Varnish Co., 223 W. Lake St., Chicago,
 Ill.

Bulls Eye—See Zinsser & Co.

Egyptian Lacquer Mfg. Co., 5 E. 40th St.
 New York, N. Y.

Hanson & Van Winkle Co., Newark, N. J.

Kalbfeisch Corp., 31 Union Sq., W., New
 York, N. Y. (See page 357.)

Maas & Waldstein Co., New York, N. Y.

Nikolas & Co., G. J., Chicago, Ill.

Van Schaack Bros. Chemical Works, 3358
 Avondale Ave., Chicago, Ill.

Zinsser & Co., W., 195 William St., New York,
 N. Y. "Bulls-Eye."

LAG SCREWS—See Screws, Coach

LAMP ADAPTERS—See Adapters, Electric
 Lamp

LAMP BRACKETS—See Brackets, Side and
 Tail Lamp

LAMP BULB BOXES—See Cases, Extra
 Lamp Bulb

LAMP BULB CASES—See Cases, Extra
 Lamp Bulb

LAMP BULBS—See Lamps, Miniature In-
 candescent

LAMP BURNERS—See Burners, Acetylene
 Lamp

Everything is listed under the NOUN or principal word

LAMP CONNECTORS—See Connectors, Electric Lamp; also Connectors, Acetylene Lamp; also Tubing, Soft Rubber

LAMP COVERS—See Covers, Lamp

LAMP DIMMERS—See Dimmers

LAMP ENAMELS—See Enamels, Lacquers and Finishes, Brass

LAMP GASKETS—See Gaskets, Headlight Lenses

LAMP GLASSES—See Glasses, Lamp

LAMP LACQUERS—See Enamels, Brass; also, Lacquers, Metal

LAMP LENSES—See Dimmers; also Glasses, Lamp

LAMP LIGHTERS—See Lighters, Acetylene Lamp

LAMP REFLECTORS—See Reflectors, Mirror

LAMP SOCKETS—See Sockets, Electric Lamp

LAMP TUBING—See Tubing, Soft Rubber

LAMP WICKS—See Wicks, Lamp

LAMPS, Acetylene Head

Brown Mfg. Co., Jno. W., Columbus, O. (See page 507.)

Columbia—See Hine-Watt Mfg. Co.

Corcoran-Victor Co., 713 Reading Rd., Cincinnati, O. "Victor."

Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.

E & J—See Edmunds & Jones Corp.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich. "E. & J."

Hall Lamp Co., C. M., Detroit, Mich. "Solar." Hine-Watt Mfg. Co., 1725 S. Michigan Ave., Chicago, Ill. "Columbia."

Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 770.)

Neverout—See Rose Mfg. Co.

Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."

Solar—See Hall Lamp Co.

Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.

Victor—See Corcoran-Victor Co.

LAMPS, ACETYLENE TRACTOR—See Headlights, Tractor Acetylene

LAMPS, DASH—See Lamps, Electric Dash

LAMPS, Electric Dash or Gage

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill. (See page 289.)

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 289.)

Amco—See Aid Mfg. Co.

Asch and Co., Inc., 18-24 W. 61st St., New York, N. Y. "Turnolite." (See page 247.)

Brown Mfg. Co., Jno. W., Columbus, O. (See page 507.)

Chicago Electric Mfg. Co., 2801-19 S. Halsted St., Chicago, Ill. "Handy."

Columbus Auto Brass Co., Columbus, O. (See page 381.)

Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)

Cowles & Co., C., New Haven, Conn. (See page 451.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Cuno Engineering Corp., 80 S. Vine St., Meriden, Conn. (See page 525.)

Douglas & Rudd Mfg. Co., Bronson, Mich.

Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.

Faw Co., J. H., 27 Warren St., New York, N. Y. (Master and Southern Distributors for Culver-Stearns Lamps.)

(See page 429.)

Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.

Handy—See Chicago Electric Mfg. Co.

Liberty Works, Egg Harbor City, N. J. (See page 521.)

Loewus, Edwin H., 304 W. 54th St., New York, N. Y.

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.

Metal Specialties Mfg. Co., 328-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)

Millwood-Brackett Co., Des Moines, Ia. (See page 327.)

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 221.)

Moswell Mfg. Co., 175 Grand St., New York, N. Y.

Motor Specialties Co., Beaver St., Waltham, Mass. "Tuway."

Murphy, H. J., Reading, Mass.

Parker-Wood Mfg. Co., 100 Purchase St., Boston, Mass.

Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass.

(See page 809.)

Presto—See Metal Specialties Mfg. Co.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

S-H—See Stuart-Howland Co.

Seco—See Spielman Electric Co.

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)

Spielman Electric Co., 1931 Broadway, New York, N. Y. "Seco."

Stuart-Howland Co., 131-41 Federal St., Boston, Mass. "S-H."

Turnolite—See Asch and Co., Inc.

Tuway—See Motor Specialties Co.

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

Whitman, B. J., 141 Franklin St., Boston, Mass.

LAMPS, ELECTRIC GAGE—See Lamps, Electric Dash

LAMPS, ELECTRIC GAGE—See Lamps, Electric Dash

LAMPS, Electric Hand or Inspection

(Lamp and flexible cord for work around car)

Accesso Mfg. Co., 99 State St., Boston, Mass. "Ideal."

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill. (See page 289.)

Adams-Bagnall Electric Co., 7209 Platt St., Cleveland, O. "Auto-Eyes."

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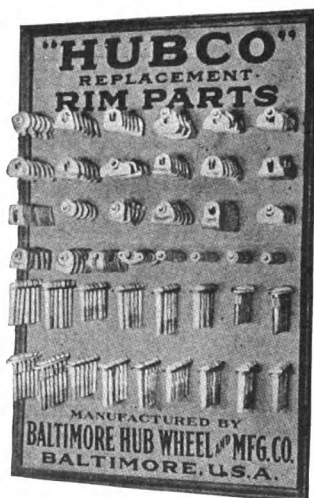
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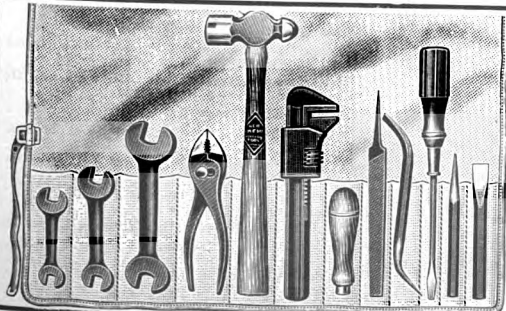
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Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 289.)
 Amco—See Aid Mfg. Co.
 American Enamel Co., Neville St., Providence, R. I. "Britelite."
 Auto-Eyes—See Adams-Bagnall Electric Co.
 Auto Specialty Co., 343 Bloomfield Ave., Passaic, N. J.
 Britelite—See American Enamel Co.
 Cellbeam Mfg. Co., 344 W. 57th St., New York, N. Y.
 Chicago Electric Mfg. Co., 2801-19 S. Halsted St., Chicago, Ill. "Handy."
 Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)
 Cowles & Co., C., New Haven, Conn. (See page 451.)
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
 Cuno Engineering Corp., Meriden, Conn. (See page 525.)
 Dannenhirsch Co., 1906 W. Dauphin St., Philadelphia, Pa. "Danno."
 Danno—See Dannenhirsch Co.
 Douglas & Rudd Mfg. Co., Bronson, Mich.
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 429.)
 Fenton Machine Tool & Die Co., Inc., Fenton, Mich. (See page 327.)
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Handy—See Chicago Electric Mfg. Co.
 Harvard Electric Co., 525 W. Van Buren St., Chicago, Ill.
 Hunt Trouble Light Co., Lima, O.
 Ideal—See Accessory Mfg. Co.
 Loewus, Edwin H., 304 W. 54th St., New York, N. Y.
 Magnet Light Co., 1526 S. Wabash Ave., Chicago, Ill. "Magnet-Lite."
 Magnet-Lite—See Magnet Light Co.
 Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.
 Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)
 Morae, Frank W., 280 Congress St., Boston, Mass. (See page 221.)
 Mosco—See Motor Specialties Co.
 Moswell Mfg. Co., 175 Grand St., New York, N. Y.
 Motor Specialties Co., Beaver St., Waltham, Mass. "Mosco."
 Niagara Searchlight Co., Eighth St. & Ferry Ave., Niagara Falls, N. Y.
 Nitelite—See Providence Electric Mfg. Co.
 Parker-Wood Mfg. Co., 100 Purchase St., Boston, Mass.
 Presto—See Metal Specialties Mfg. Co.
 Providence Electric Mfg. Co., 33 Broad St., Providence, R. I. "Nitelite."
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)
 S.-H.—See Stuart-Howland Co.
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)
 Stuart-Howland Co., 131-31 Federal St., Boston, Mass. "S.-H."
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Whitman, B. J., 141 Franklin St., Boston, Mass.

LAMPS, ELECTRIC HEAD—See Headlights, Electric

LAMPS, Electric Head, for Fords

American Auto Lamp Co., 20 Desbrosses St., New York, N. Y. "Rialto."
 B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.
 Cor-Co-Lite—See Corcoran Lamp Co.
 Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
 Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
 Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 429.)
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 770.)
 K-D Lamp Co., 108-10 W. Third St., Cincinnati, O.
 Rialto—See American Auto Lamp Co.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Victor—See Corcoran-Victor Co.

LAMPS, ELECTRIC INSPECTION—See Lamps, Electric Hand

LAMPS, Electric Side and Tail

A-K—See Angsten-Kox Co.
 Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill. (See page 289.)
 Adams-Bagnall Electric Co., 7809 Platt St., Cleveland, O. "Auto-Eyes."
 Aladdin—See Hawthorne Lamp Works.
 American Auto Lamp Co., 20 Desbrosses St., New York, N. Y. "Yankee."
 Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K." (Tail lamps only.)
 Auto-Eyes—See Adams-Bagnall Electric Co.
 Auto Fender Safety Lamp Co., Corinth, N. Y.
 Automatic Signal & Sign Co., 905 Rex Ave., N. E., Canton, O. "Dependable." (Tail lamps only.)
 B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.
 Bac-Lite Corp., 20 E. Lake St., Chicago, Ill. (Tail lamps only.)
 Boesch Lamp Co., 1135 Mission St., San Francisco, Cal.
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 507.)
 Browning—See Hawthorne Lamp Works.
 Chicago Electric Mfg. Co., 2801-19 S. Halsted St., Chicago, Ill. "Handy."
 Columbus Auto Brass Co., Columbus, O. "Pathfinder." (See page 381.)
 Cor-Co-Lite—See Corcoran Lamp Co.
 Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
 Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
 Cowles & Co., C., New Haven, Conn. (See page 451.)
 Dependable—See Automatic Signal & Sign Co.
 Dietz Co., R. E., 60 Light St., New York, N. Y. "Vigilant."
 Dirigible—See Hawthorne Lamp Works.
 Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.

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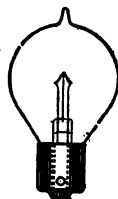
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The Wehr line of Fordson Tractor Accessories has gained prominence on account of the worth, strength and general desirability of the various devices in this line.

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Every Auto dealer should write for full information and trade terms on the Wehr line.

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LAMPS, Electric Side and Tail (Continued)

Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.
 Electric Auto-Lite Corp., Toledo, O.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass. (Tail lamps only.)
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Hall Lamp Co., C. M., Detroit, Mich. "Solar."
 Handy—See Chicago Electric Mfg. Co.
 Hawthorne Lamp Works, 1410 Michigan Ave., Chicago, Ill. "Submarine," "Dirigible," "Aladdin," "Seventy-Five," "Browning Bullet," "Lewis Bullet," "Torpedo."
 Howe Lamp & Mfg. Co., 3656 N. Francisco Ave., Chicago, Ill.
 Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 770.)
 K-D Lamp Co., 108-10 W. Third St., Cincinnati, O.
 K-S—See Kilbourn-Sauer Co.
 Kilbourn-Sauer Co., Post Road, Fairfield, Conn. "K-S."
 Lewis Bullet—See Hawthorne Lamp Works.
 Neverout—See Rose Mfg. Co.
 Pathfinder—See Columbus Auto Brass Co.
 Proos Mfg. Co., Grand Rapids, Mich.
 Rosco—See Rosen & Co.
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)
 S & M Lamp Co., 118 W. 36th Pl., Los Angeles, Cal.
 Seventy-Five—See Hawthorne Lamp Works.
 Silvey Electric Co., 10-16 S. Canal St., Dayton, O.
 Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 257.)
 Solar—See Hall Lamp Co.
 Submarine—See Hawthorne Lamp Works.
 Superior Lamp Mfg. Co., 148-50 W. 53d St., New York, N. Y.
 Torpedo—See Hawthorne Lamp Works.
 Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
 Victor—See Corcoran-Victor Co.
 Vigilant—See Dietz Co.
 Warnola Mfg. Co., 73 Wooster St., New York, N. Y.
 White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
 Yankee—See American Auto Lamp Co.

LAMPS, Electric Side and Tail, for Fords

A-K—See Angsten-Kox Co.
 American Auto Lamp Co., 20 Desbrosses St., New York, N. Y. "Rialto."
 Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."
 B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.
 Bac-Lite Corp., 20 E. Lake St., Chicago, Ill.
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 507.)
 Bullet—See Hawthorne Lamp Works.
 Columbus Auto Brass Co., Columbus, O. (See page 381.)

Cor-Co-Lite—See Corcoran Lamp Co.
 Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
 Corcoran-Victor Co., 713 Reading Rd., Cincinnati, O. "Victor."
 Culver-Stearns Mfg. Co., Detroit, Mich.
 Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.
 Fay Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 429.)
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Hawthorne Lamp Works, 1410 Michigan Ave., Chicago, Ill. "Bullet."
 Howe Lamp & Mfg. Co., 3656 N. Francisco Ave., Chicago, Ill.
 Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 770.)
 K-D Lamp Co., 108-10 W. Third St., Cincinnati, O.
 K-S—See Kilbourn-Sauer Co.
 Kilbourn-Sauer Co., Post Road, Fairfield, Conn. "K-S."
 Neverout—See Rose Mfg. Co.
 Perkins Marine Lamp Corp., 1943 Pitkin Ave., Brooklyn, N. Y. "Perko."
 Perko—See Perkins Marine Lamp Corp.
 Rialto—See American Auto Lamp Co.
 Rosco—See Rosen & Co.
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)
 Superior Lamp Mfg. Co., 148-50 W. 53d St., New York, N. Y.
 Victor—See Corcoran-Victor Co.

LAMPS, Electric Speedometer, for Fords

Bull Pup—See Metal Specialties Mfg. Co.
 Bull Terrier—See Metal Specialties Mfg. Co.
 Metal Specialties Mfg. Co., 838-53 N. Kedzie Ave., Chicago, Ill. "Bull Pup," "Bull Terrier," "Presto." (See page 503.)
 Presto—See Metal Specialties Mfg. Co.

LAMPS, ELECTRIC TAIL—See Lamps, Electric Side and Tail**LAMPS, GAGE—See Lamps, Electric Dash or Gage****LAMPS, HAND—See Lamps, Electric Hand****LAMPS, INSPECTION—See Lamps, Electric, Hand or Inspection****LAMPS or BULBS, Miniature Incandescent**

Advance Lamp Works, 851-61 W. Superior St., Chicago, Ill. "Triangle."
 American Auto Lamp Co., 415 Union St., Union Hill, N. J.
 American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Everready."
 Anthony Wayne Lamp Co., 1016 Savilla Ave., Fort Wayne, Ind.

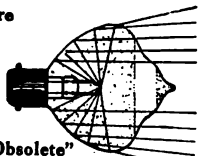
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We are the sole manufacturers of the **SIMPLEX** No Glare Auto Lamp shown in the illustration. The patented exclusive feature of this lamp is its Parabolic shape. The lower and upper portions are frosted. This forms a light-throwing reflector, directing a strong, clear light beam on the road. This bulb is legal from coast to coast and can be used with or without lenses. Simple and efficient—Sells wherever displayed. We also manufacture standard bulbs for headlights, dash and tail lights and also full line of lamps for all lighting purposes. Catalog, including prices, on request.

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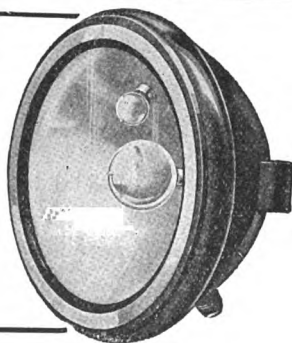
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LAMPS or BULBS, Miniature Incandescent (Continued)

Banner Electric Division of National Lamp Works, Youngstown, O.
 Brilliant Electric Division of National Lamp Works, 4503 Hough Ave., Cleveland, O.
 Bryan-Marsh Division of National Lamp Works, 623-33 S. Wabash Ave., Chicago, Ill.
 Buckeye Electric Division of National Lamp Works, 46th & Perkins Ave., Cleveland, O.
 Colonial Electric Division of National Lamp Works, Warren, O.
 Columbia Lamp Division of National Lamp Works, 704 Chestnut St., St. Louis, Mo.
 Continental Electric Lamp Co., 1433 Bryan Pl., Chicago, Ill.
 Domestic Tungsten Lamp Co., 418 Tenth St., West New York, N. J.
 Edison Lamp Works of General Electric Co., Sussex St., Harrison, N. J.
 Eveready—See American Ever Ready Works
 Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for "Tungsol" Lamps.) (See page 429.)
 Federal Miniature Lamp Division, National Lamp Works of General Electric Co., 926 S. Michigan Ave., Chicago, Ill. (See page 507.)
 Federal Miniature Lamp Division, National Lamp Works of General Electric Co., 6 E. 39th St., New York, N. Y. (See page 505.)
 Fostoria Lamp Division of National Lamp Works, Fostoria, O.
 General Lamp Division of National Lamp Works, Cleveland, O.
 International Incandescent Lamp Works, Bergentine & Franklin Sts., Union Hill, N. J. "Ora." (See page 507.)
 Jaeger Co., H. J., 280-300 Park Ave., Weehawken, N. J. "Nitros."
 Miniature Incandescent Lamp Corp., 35 Eighth Ave., Newark, N. J. "Tungsol," "Tulite."
 National Lamp Works of General Electric Co., 106 Nela Park, Cleveland, O.
 Nelco—See New Era Lamp Co.
 New Era Lamp Co., 12 Sloane St., South Orange, N. J. "Nelco."
 Nitros—See Jaeger Co.
 Ora—See International Incandescent Lamp Works.
 Packard Lamp Division of National Lamp Works, Warren, O.
 Shelby Lamp Division of General Electric Co., Shelby, O.
 Sterling Electric Lamp Division of National Lamp Works, Warren, O.
 Sunbeam Lamp Division of National Lamp Works of General Electric Co., 500 S. Clinton St., Chicago, Ill.
 Triangle—See Advance Lamp Works.
 Tulite—See Miniature Incandescent Lamp Corp.
 Tungsol—See Faw Co.
 U. S. Incandescent Lamp Co., Laclede Bldg., St. Louis, Mo.
 Universal Electric Lamp Co., 24 Treat Pl., Newark, N. J.
 Weehawken Tungsten Lamp Co., 340 Hudson Ave., West Hoboken, N. J.
 Westinghouse Lamp Co., 165 Broadway, New York, N. Y. (See page 509.)
 Westinghouse-McCandless Co., 406 W. 31st St., New York, N. Y.

LAMPS, Oil, Side and Tail

Adams & Westlake Co., Chicago, Ill.
 "Adlake." (See page 507.)

Adlake—See Adams & Westlake Co.
 American Auto Lamp Co., 20 Desbrosses St., New York, N. Y. "Yankee."
 B. & L. Auto Lamp Co., 103-05 Mott St., New York, N. Y.
 Boesch Lamp Co., 1135 Mission St., San Francisco, Cal.
 Brown Mfg. Co., Jno. W., Columbus, O. (See page 507.)
 Champion—See Diets Co.
 Convoy—See Diets Co.
 Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
 Dainty—See Diets Co.
 Diets Co., R. E., 60 Laight St., New York, N. Y. "Dainty," "Royal," "Champion," "Royal Junior," "Iron-Clad," "Monitor," "Pilot," "Convoy."
 Dressel Mfg. Corp., 3876 Park Ave., New York, N. Y.
 E & J—See Edmunds & Jones Corp.
 Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich. "E. & J."
 Hall Lamp Co., C. M., Detroit, Mich. "Solar."
 Indiana Lamp Co.—See Zinke Co.
 Iron-Clad—See Diets Co.
 Monitor—See Diets Co.
 Neverout—See Rose Mfg. Co.
 Pilot—See Diets Co.
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."
 Royal—See Diets Co.
 Royal Junior—See Diets Co.
 Solar—See Hall Lamp Co.
 Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y.
 Victor—See Corcoran-Victor Co.
 Yankee—See American Auto Lamp Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 770.)

LAMPS, OIL TRACTOR—See Lamps, Tractor Oil

LAMPS, REEL—See Lamps, Electric Hand; also Lights, Spot

LAMPS, SIDE—See Lamps, Electric Side and Tail; also Lamps, Oil

LAMPS, SPEEDOMETER—See Lamps, Electric Dash

LAMPS, SPEEDOMETER, FOR FORDS—See Lamps, Electric Speedometer

LAMPS, SPOT—See Lights, Spot

LAMPS, SWIVEL—See Lights, Spot

LAMPS, TAIL—See Lamps, Electric Side; also Lamps, Oil, Side and Tail

LAMPS, TRACTOR ACETYLENE—See Headlights, Tractor Acetylene

LAMPS, TRACTOR ELECTRIC—See Headlights, Tractor Electric

LAMPS, Tractor Oil

Adams & Westlake Co., Chicago, Ill.
 (See page 507.)

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SAVE YOUR VALVES AND VALVE SEAT REAMERS from the scrap pile. The salvage will pay for a **FRANKLIN REPAIR SHOP UNIT**.

VALVE AND VALVE SEAT REAMER ground and sharpened on the same machine, same angle.

Extra attachment for sharpening expansion reamers.

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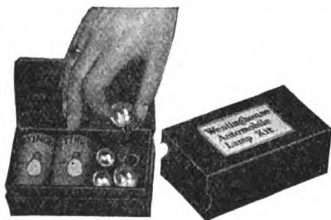
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It's more than an inconvenience.

It's a Menace

Should this happen to him, he will be mighty grateful to you for having sold him six extra Westinghouse Automobile Mazda lamps in the

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Chicago, Ill.	Conway Bldg.
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Cleveland, Ohio	Seward Bldg.
Columbus, Ohio	Traction Terminal Bldg.
Dallas, Texas	Cotton Exchange Bldg.
Davenport, Ia.	Third and Ripley Streets
Detroit, Mich.	Dime Savings Bank Bldg.
Kansas City, Mo.	1012 Baltimore Avenue
Los Angeles, Cal.	801 Van Nuy Bldg.
Memphis, Tenn.	Exchange Bldg.
Milwaukee, Wis.	Merchants & Mfrs. Bk. Bld.
Minneapolis, Minn.	Metropolitan Life Bldg.
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New York, N. Y.	510 West 23rd Street
Philadelphia, Pa.	1005 Market Street
Pittsburgh, Pa.	Union Nat'l Bank Bldg.
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Seattle, Wash.	Alaska Bldg.
Syracuse, N. Y.	708 Keith Bldg.
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LAMPS, TUNGSTEN—See Lamps, Miniature Incandescent

LAMPS OR HEADLIGHTS, ELECTRIC—
See Headlights, Electric

LANTERNS, HAND—See Lights, Electric Flash

LAP ROBES—See Robes

LAPPING TOOLS—See Tools, Cylinder Lapping

LAPS, CYLINDER—See Tools, Lapping

LATCHES, EMERGENCY BRAKE, FOR FORDS—See Handles, Emergency Brake

LATCHES, HOOD—See Fasteners, Hood

LATHE CHUCKS—See Chucks, Lathe

LATHE CRANKSHAFT TURNING ATTACHMENTS—See Attachments, Lathe Crankshaft Turning

LATHE CYLINDER GRINDING ATTACHMENTS—See Attachments, Lathe Cylinder Grinding

LATHE DOGS—See Dogs, Lathe

LATHE MILLING ATTACHMENTS—See Attachments, Lathe Milling

LATHE TOOL HOLDERS—See Holders, Lathe and Planer Tool

LATHE TOOLS—See Tools, Lathe

LATHES, Bench or Precision

Ames Co., B. C., Waltham, Mass.
(See page 399.)

Catacract—See Hardinge Bros.

Elgin Tool Works, 61-69 N. State St., Elgin, Ill.

Goodell-Pratt Co., Greenfield, Mass.

Hardinge Bros., 1770 Berteau Ave., Chicago, Ill. "Catacract."

Little Giant Co., 199 Rock St., Mankato, Minn.
National Premier Machine Tool Co., 1512 Lakeside Ave., Cleveland, O.

Potter Tool & Machine Works, S. A., 69 E. 130th St., New York, N. Y.

Pratt & Whitney Co., 111 Broadway, New York, N. Y.

Remington Tool & Machine Co., 88 Broad St., Boston, Mass.

Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.

Shepard Lathe Co., Canal & Jackson Sts., Cincinnati, O.

Sloan & Chase Mfg. Co., 351 Sixth Ave., New York, N. J.

South Bend Lathe Works, 600 E. Madison St., South Bend, Ind. (See page 511.)

Stark Tool Co., 218 Moody St., Waltham, Mass.

Van Norman Machine Tool Co., 160 Wilbraham Ave., Springfield, Mass.

Wade-American Tool Co., 49-59 River St., Waltham, Mass.

LATHES, Crank Pin

American Tool Works Co., Pearl & Eggleston Aves., Cincinnati, O.

Lodge & Shipley Machine Tool Co., 3055 Cole-rain Ave., Cincinnati, O.

Wickes Bros., 2501 Water St., Saginaw, Mich.

LATHES, Engine

American Tool Works Co., Pearl & Eggleston Aves., Cincinnati, O.

Barker & Co., Wm., Pleasant & Wheeler Sts., Covington, Ky.

Barnes Co., W. F. & John, 439 Ruby St., Rockford, Ill.

Barnes Drill Co., 314-30 Chestnut St., Rockford, Ill.

Betts Machine Co., Rochester, N. Y.

Boye & Emmes Machine Tool Co., 2345-51 Spring Grove Ave., Cincinnati, O.

Bradford Machine Tool Co., 687 Evans St., Cincinnati, O.

Bridgeford Machine Tool Works, 177 Winton Rd., Rochester, N. Y.

C. & J.—See Carroll-Jamieson Machine Tool Co.

Canedy-Otto Mfg. Co., Chicago Heights, Ill.
Carroll-Jamieson Machine Tool Co., Davis Ave., Batavia, O. "C. & J."

Chord Lathe Co., Ninth St. & New York Ave., Newcastle, Ind.

Cincinnati Lathe & Tool Co., 3307-11 North St. (Oakley), Cincinnati, O. "Cintilathe."

Cintilathe—See Cincinnati Lathe & Tool Co.

Cisco Machine Tool Co., Elmore & C. H. & D. Ry., Cincinnati, O.

Conradson Machine Tool Co.—See Ryerson & Son.

Dalton Mfg. Corp., Sound Beach, Conn.

Davis Machine Co., C. F., 133 Andrews St., Rochester, N. Y.

Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.

Driggs Ordnance Co., 19 W. 44th St., New York, N. Y. "New Haven."

Economy—See Rockford Lathe & Drill Co.

Fay—See Jones & Lamson Machine Co.

Fay & Egan Co., J. A., Front & John Sts., Cincinnati, O.

Fay & Scott, Dexter, Me.

Fay Machine Tool Co., Philadelphia, Pa.

Filsmith—See Smith Mfg. Co.

Fitchburg Machine Works, 64 Main St., Fitchburg, Mass. "Lo-swing."

Flather Mfg. Co., E. J., 46 Spring St., Nashua, N. H.

Gisholt Machine Co., 1515 E. Washington Ave., Madison, Wis.

Greaves-Klusman Tool Co., Cincinnati, O.

Hamilton Machine Tool Co., Hamilton, O.

Hendey Machine Co., 105 Summer St., Torrington, Conn.

Jones & Lamson Machine Co., Whitmore St., Springfield, Vt. "Fay."

Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.

Little Giant Co., 199 Rock St., Mankato, Minn.

Lo-swing—See Fitchburg Machine Works.

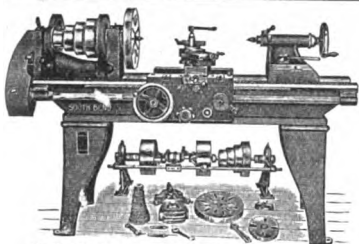
Lodge & Shipley Machine Tool Co., 3055 Cole-rain Ave., Cincinnati, O.

Mechanical Lathe Co., 2411 S. Springfield Ave., Chicago, Ill.

Monarch Machine Tool Co., 102 Oak St., Sidney, O.

Morris Machine Tool Co., Court & Harriet Sts., Cincinnati, O.

Everything is listed under the NOUN or principal word



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9"x3' Lathe	\$ 176.00	\$ 216.00
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21"x12' Lathe	848.00	923.00
24"x14' Lathe	1,140.00	1,230.00

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Mueller Machine Tool Co., 2425-29 Colerain Ave., Cincinnati, O.
 Mulliner—See Porter-Cable Machine Co.
 Myers Machine Tool Co., Second & Chestnut Sts., Columbia, Pa.
 National Lathe Co., 11-15 W. Second St., Cincinnati, O.
 New Haven—See Driggs Ordnance Co.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. "Pond."
 Oliver Machinery Co., 1025 Clancy St. N. E., Grand Rapids, Mich.
 Pond—See Niles-Bement-Pond Co.
 Porter-Cable Machine Co., 1708 N. Salina St., Syracuse, N. Y. "Mulliner."
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Putnam Machine Co., Newton Pl., Fitchburg, Mass.
 Reed-Prentice Co., 677 Cambridge St., Worcester, Mass.
 Robbins Machine Co., 42 Lagrange St., Worcester, Mass.
 Rockford Lathe & Drill Co., 1327 14th Ave., Rockford, Ill. "Economy."
 Rockford Tool Co., 2410 11th St., Rockford, Ill.
 Ryerson & Son, Joseph T., 2558 W. 16th St., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)
 Sebastian Lathe Co., Cincinnati, O.
 Seneca Falls Mfg. Co., 314-40 Falls St., Seneca Falls, N. Y. "Star."
 Shepard Lathe Co., Canal & Jackson Sts., Cincinnati, O.
 Sidney Machine Tool Co., Sidney, O.
 Smith Mfg. Co., Philip, Sidney, O. "Ful-smith."
 South Bend Lathe Works, 600 E. Madison St., South Bend, Ind. (See page 511.)
 Springfield Machine Tool Co., Southern Ave. & P. C. & St. L. R. R., Springfield, O.
 Stapt & Co., John B., Dunkirk, N. Y.
 Jtar—See Seneca Falls Mfg. Co.
 Walcott Lathe Co., 111-13 Calhoun St., Jackson, Mich.
 Whitcomb-Blaisdell Machine Tool Co., 53 Franklin St., Boston, Mass.
 Wickes Bros., 2501 Water St., Saginaw, Mich.
 Willard Machine Tool Co., Cincinnati, O.

LATHES, Forming

Meriden Machine Tool Co., 100 Britannia St., Meriden, Conn.

LATHES, PATTERN MAKERS — See Lathe, Woodworking

LATHES, PRECISION—See Lathe, Bench or Precision

LATHES, Turret

Aome Machine Tool Co., 4955 Spring Grove Ave., Cincinnati, O.
 American Tool Works Co., Pearl & Eggleston Aves., Cincinnati, O.
 American Tool & Machine Co., 10 High St., Boston, Mass.
 Bardons & Oliver, 1133 W. Ninth St., Cleveland, O.
 Bradford Machine Tool Co., 657 Evans St., Cincinnati, O.

Bullard Machine Tool Co., Broad St. & Railroad Ave., Bridgeport, Conn.
 Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.
 Drees Machine Tool Co., 227-29 W. McKicken Ave., Cincinnati, O.
 Fay & Scott, Dexter, Me.
 Federal Machine Co., 1602-18 S. Lafayette St., South Bend, Ind.
 Fulton Machine Tool Co., 1422 W. Randolph St., Chicago, Ill.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Greenfield Tap & Die Corp., Greenfield, Mass. (See page 855.)
 Greenlee Bros. & Co., 2100-2400 12th St., Rockford, Ill.
 Hamilton Machine Tool Co., Hamilton, O.
 Hartness—See Jones & Lamson Machine Co.
 Inman Co., H. A., Newark, N. Y.
 International Machine Tool Co., 1124 W. 21st St., Indianapolis, Ind. "Libby."
 Jones & Lamson Machine Co., Whitmore St., Springfield, Vt. "Hartness."
 Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.
 Libby—See International Machine Tool Co.
 Lodge & Shipley Machine Tool Co., 3055 Colerain Ave., Cincinnati, O.
 Meriden Machine Tool Co., 100 Britannia St., Meriden, Conn.
 Millholland Machine Co., 1102 W. 23rd, Indianapolis, Ind.
 Monarch Machine Tool Co., 102 Oak St., Sidney, O.
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Potter & Johnston Machine Co., 1035 Newport Ave., Pawtucket, R. I.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Reed-Prentice Co., 677 Cambridge St., Worcester, Mass.
 Rivett Lathe & Grinder Co., 20 Riverview Rd., (Brighton), Boston, Mass.
 Smurr & Kamen Co., 323 N. Albany Ave., Chicago, Ill.
 Southworth Machine Co., Portland, Me.
 Steinkle Turret Machine Co., Madison, Wis. (See page 513.)
 Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, O.
 Wood Turret Machine Co., S. Alabama St., Brazil, Ind.

LATHES, Woodworking

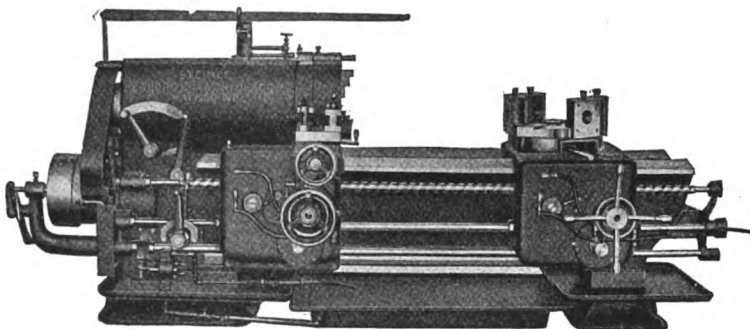
American Saw Mill Machinery Co., Hackettstown, N. J.
 American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.
 Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.
 Defiance Machine Works, 424 Perry St., Defiance, O.
 Fay & Egan Co., J. A., Front & John Sts., Cincinnati, O.
 Fay & Scott, Dexter, Me.
 Little Giant Co., 199 Rock St., Mankato, Minn.
 Ober Mfg. Co., Chagrin Falls, O.
 Oliver Machinery Co., 1025 Clancy St. N. E., Grand Rapids, Mich.
 Porter Machinery Co., C. O., 606 Front Ave., N. W., Grand Rapids, Mich.

Everything is listed under the NOUN or principal word

STEINLE TURRET MACHINE CO.

MADISON, WISCONSIN

**Originators of the Heavy Duty Full Swing
Side Carriage Turret Lathe**



"Standard 24" Steinle Full Swing Side Carriage Turret Lathe with 4" Hole Through Spindle and Equipped with Oil Pans, Pump and Piping for Direct Belt Drive."

The machine shown above is the superior of any heavy duty turret lathe on the market as a general purpose machine. It has exclusive features that are invaluable and permit of better tooling arrangements than can be applied to any other machine of this character, thereby greatly increasing efficiency in point of quality and quantity of production.

This machine will turn out exceptionally accurate duplicate or interchangeable parts at a very low production cost.

Interchangeable parts mean low assembling cost, high quality product, and good repair parts service.

The Steinle 24" Full Swing Side Carriage Turret Lathe is accomplishing these results for many tractor, truck, and gas engine manufacturers.

Send us drawings of your work and let our Engineering Department tell what this machine can do for you.

Illustrative and descriptive folders, list of prominent users and full information on request.

STEINLE TURRET MACHINE CO.
MADISON, WISCONSIN

LATHES, Woodworking (Continued)

- Power & Co., L., 20 S. 2nd St., Philadelphia, Pa.
 Robbins Machine Co., 42 Lagrange St., Worcester, Mass.
 Smith Machine Co., H. B., Smithville, N. J.
LEAD BURNERS—See Burners, Lead
LEAD BURNING MACHINES—See Burners, Lead
LEAD MOLDS—See Molds, Lead
LEAF SPRING STRAIGHTENING MACHINES—See Machines, Leaf Spring Straightening
LEAF SPRINGS—See Springs, Leaf

LEATHER, Artificial or Imitation

(For upholstery and tops; for genuine leather—See Leather, Natural)

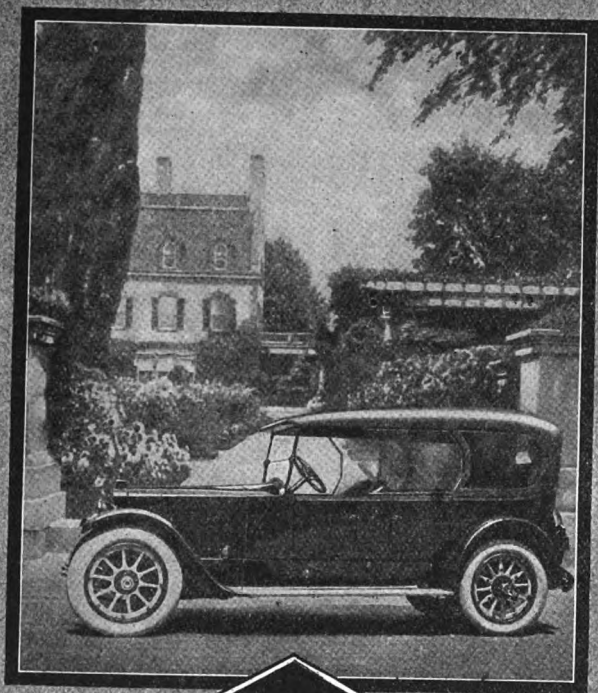
- Ashtabula Hide & Leather Co., Ashtabula, O.
 Athol Mfg. Co., Athol, Mass. "Atholeather." (See page 517.)
 Atholeather—See Athol Mfg. Co.
 Barrell Co. of New York, Wm. L., 50 Leonard St., New York, N. Y. "Wilbaco."
 Blue Robin—See Lawrence & Co.
 Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass. "Synthide."
 Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. "Topseall," "Tufhyde." (See page 305.)
 Broncho—See Zapon Leather Cloth Co.
 Buco—See Burgin & Co.
 Bull Dog—See Mutt Co.
 Burgin & Co., 487 Broadway, New York, N. Y. "Buco."
 Charoleen—See Reilly & Son.
 California Durablether—See Sloane, W. & J.
 Chase & Co., L. C., 89 Franklin St., Boston, Mass. "Leatherwove."
 Chicago Decorative Leather Co., 426 S. Clinton St., Chicago, Ill. "Elkide."
 Conneaut Leather Co., Commerce St., Conneaut, O.
 Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill. "Ima-Hide."
 Cotex Co., 331-59 Oliver St., Newark, N. J.
 Dridek—See Mutt Co.
 Duncan Co., W. H., 70-72 Worth St., New York, N. Y.
 du Pont de Nemours & Co., E. I. (Fabrikoid Div.), Wilmington, Del. "Fabrikoid," "Rayntite."
 Durablether—See Sloane, W. & J.
 Duratex Co., 768 Freylinghoysen Ave., Newark, N. J.
 Duxrane—See O'Bannon Corp.
 Elkide—See Chicago Decorative Leather Co.
 Endura Mfg. Co., 6317 Eastwick Ave., Philadelphia, Pa. "Enduralite."
 Enduralite—See Endura Mfg. Co.
 Fabrikoid—See du Pont de Nemours & Co.
 Haskellite Mfg. Corp., 133 W. Washington St., Chicago, Ill.
 Ima-Hide—See Chicago Rawhide Mfg. Co.
 Keratol Co., South & Van Buren Sts., Newark, N. J.
 Lawrence & Co., 24 Thomas St., New York, N. Y. (Sole Distributors for Merrimack Mfg. Co., Lowell, Mass.) "Blue Robin."
 Leatherlike Co., Oakman Blvd. & Detroit Terminal R.R., Detroit, Mich.
 Leatherwove—See Chase & Co.
 Masland Durablether Co.—See Sloane, W. & J.
 Merrimack Mfg. Co.—See Lawrence & Co.
 Midland Fabrics Co., 228 W. 58th St., New York, N. Y. (Distributors.) (See page 303.)
 Moroccoline—See Zapon Leather Cloth Co.
 Muleskin—See Zapon Leather Cloth Co.
 Mustang—See Zapon Leather Cloth Co.
 Mutt Co., L. J., Boston, Mass. "Bull Dog," "Dridek." (See page 431.)
 Newark Rubber Co., Schley St., Garfield, N. J.
 Nonleek—See O'Bannon Corp.
 O'Bannon Corp., 200 Fifth Ave., New York, N. Y. "Nonleek," "Duxrane."
 Pantasote Co., 11 Broadway, New York, N. Y. "Textasote."
 Pinto—See Zapon Leather Cloth Co.
 Pyroxoline—See Athol Mfg. Co.
 Randco—See Zapon Leather Cloth Co.
 Rayntite—See du Pont de Nemours & Co.
 Reilly & Son, P., Mott St. & Passaic Ave., Newark, N. J. "Charoleen."
 Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich.
 Seamans & Cobb Co., 140 Essex St., Boston, Mass.
 Sloane, W. & J., 571 Fifth Ave., New York, N. Y. (Sole Distributors for Masland Durablether Co., Philadelphia, Pa. "Durablether," "California Durablether.") (See pages 195, 517, and 535.)
 Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 257.)
 Super-Glos Mfg. Co., 1091 Mission St., San Francisco, Cal.
 Synthide—See Boston Woven Hose & Rubber Co.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.
 Textasote—See Pantasote Co.
 Textileather Co., 1819 Broadway, New York, N. Y.
 Toledo Auto Fabrics Co., Toledo, O. (See page 273.)
 Topseall—See Bridgeport Coach Lace Co.
 Tufhyde—See Bridgeport Coach Lace Co.
 Wilbaco—See Barrell Co. of New York.
 Zapon Leather Cloth Co., 200 Fifth Ave., New York, N. Y. "Moroccoline," "Broncho," "Muleskin," "Randco," "Mustang," "Pinto." (See page 515.)

LEATHER BELTING—See Belting, Leather**LEATHER COATS**—See Clothing, Motorists'**LEATHER DOOR PROTECTORS**—See Protectors, Door**LEATHER DRESSING**—See Dressing, Leather**LEATHER FAN BELTS**—See Belts**LEATHER, Friction**

(For lining brakes and clutches—See also Belting, Leather)

- Automotive Leather Products Co., 211 E. 188th St., New York, N. Y.
 Boston Leather Specialties, 30 Merrimack St., Boston, Mass.
 Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.
 Coe & Brown, 204 George St., New Haven, Conn.
 Deford Co., 729 Atlantic Ave., Boston, Mass.
 Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 595.)

Everything is listed under the NOUN or principal word



LEATHER **ZAPON** CLOTH

The upholstery that is waterproof

Send for samples showing the ZAPON brands - Muleskin, Broncho and Mustang - that are made especially for fine automobile upholstery and California Top work

ZAPON LEATHER CLOTH COMPANY

200 Fifth Ave., New York

Branches: Chicago, Detroit, Los Angeles, St. Louis

Please mention The Automobile Trade Directory

LEATHER, Friction (Continued)

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Leather.) (See page 113.)

Excelmo—See Missouri Belting Co.

G. & K.—See Graton & Knight Mfg. Co.

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind. "Wetprufe," "Leathertex."

Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa. "Vim."

Hudson Belting Co., 1-3 Eaton Pl., Worcester, Mass.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass.

Jewell Belting Co., 55 Trumbull St., Hartford, Conn.

Leathertex—See Hide, Leather & Belting Co.

M. L. B.—See Milwaukee Leather Belting Co.

Milwaukee Leather Belting Co., 146 W. Water St., Milwaukee, Wis. "M. L. B."

Missouri Belting Co., 1031-29 S. Grand Ave., St. Louis, Mo. "Excelmo."

Moloney Belting Co., 124-28 N. Franklin St., Chicago, Ill. (See page 113.)

National Leather Belt Co., 343 E. 38th St., New York, N. Y.

National Leather Co., 161 South St., Boston, Mass.

Page Belting Co., Concord, N. H.

Providence Belting Co., 25 Charles St., Providence, R. I.

Rahmann & Co., Geo., 31 Spruce St., New York, N. Y.

Ranville Co., F., 241-49 Pearl St., Grand Rapids, Mich.

Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.

Rose Mfg. Co., Frank, Hastings, Neb. (See page 875.)

Schleren Co., Chas. A., 76 Ferry St., New York, N. Y.

Taylor Belting Co., 247 S. Meridian St., Indianapolis, Ind.

Vim—See Houghton & Co.

Wetprufe—See Hide, Leather & Belting Co.

Wilder & Co., 1035 Crosby St., Chicago, Ill.

Williams & Sons, I. B., 9 Orchard St., Dover, N. H.

LEATHER, IMITATION—See Leather, Artificial

LEATHER MATS—See Mats, Leather

LEATHER MEASURING MACHINES—See Machines, Leather Measuring

LEATHER MOULDING—See Moulding, Flexible Leather

LEATHER MUD GUARDS—See Fenders,

LEATHER, Natural

(Genuine Leather for upholstery and tops; for Artificial or Imitation Leather—See Leather, Artificial)

American Leather Mfg. Co., New & Nuttmann Sts., Newark, N. J. "Stag."

American Oak Leather Co., Kenner St., Cincinnati, O.

Arrow—See Ryan Leather Co.

Ashtabula Hide & Leather Co., Ashtabula, O.

Beaver—See Straus & Sons Corp.

Black Bear—See Radel Leather Mfg. Co.

Blanchard Bro. & Lane, 20 Bruen St., Newark, N. J.

Boulee-Fraser Leather Co., 232 Canal St., New York, N. Y.

Byron & Sons Leather Co., W. D., Williamsport, Md. "Tanok," "Eureka."

Cleveland Tanning Co., Jennings & Dennison Aves., S. W., Cleveland, O.

Conneaut Leather Co., Commerce St., Conneaut, O.

Eagle—See Reilly Co.

Eagle-Ottawa Leather Co., Grand Haven, Mich. (See page 517.)

Eureka—See Byron & Sons Leather Co.

General Leather Co., 418 Frelinghuysen Ave., Newark, N. J.

Herts Leather Co., Max, 54-68 Oliver St., Newark, N. J.

Howell-Hinchman Co., Middletown, N. Y.

Lack-a-Tan—See Lackawanna Leather Co.

Lackawanna Leather Co., Hackettstown, N. J. "Lack-a-Tan."

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Pearce Bros. Leather Co., Newark, N. J.

Radel Leather Mfg. Co., Hamburg Place Rd., Newark, N. J. "Black Bear."

Raser Tanning Co., Ashtabula, O.

Reilly Co., John, 40 Ave. C., Newark, N. J. "Eagle."

Reilly & Son, P., Mott St. & Passaic Ave., Newark, N. J. "Stag."

Roser & Son, Hermann, Glastonbury, Conn.

Ryan Leather Co., Woolsey St., Irvington, N. J. "Arrow."

Shields Bros., Bombay, N. Y.

Smith & Sons, L. M., 15-17 Lock St., Newark, N. J.

Stag—See American Leather Mfg. Co.

Stag—See Reilly & Son.

Standard Leather Co. of Pittsburgh, 394 Spring Garden Ave., N. S., Pittsburgh, Pa.

Stengel, Geo., 49 Western Ave., Newark, N. J.

Stengel & Rothschild, Maine & Kosuth Sts., Newark, N. J.

Straus & Sons Corp., M., 506 Frelinghuysen Ave., Newark, N. J. "Beaver."

Tanok—See Byron & Sons Leather Co.

Wilder & Co., 1035 Crosby St., Chicago, Ill.

Wilder Tanning Co., Waukegan, Ill.

Wing Co., Charles, Amesbury, Mass. (Dealers.) (See page 799.)

LEATHER, Rawhide Lace

(For preventing motor hoods or bonnets from rattling; for Fabric Lace—See Lacing, Fabric)

Chicago Rawhide Mfg. Co., 1301 Elston Ave., Chicago, Ill.

Cocheco—See Williams & Son.

Defiance—See Norwich Belt Mfg. Co.

Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 595.)

Eagle—See Mooney Belting Co.

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Leather.) (See page 113.)

G. & K.—See Graton & Knight Mfg. Co.

Gay, Fred E., Olneyville, R. I.

General Tanning Corp., Chester, Mt. Vernon & Melborn Aves., Irvington, N. J.

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind.

Everything is listed under the NOUN or principal word

Eagle-Ottawa Leather Company

LARGEST TANNERS OF AUTOMOBILE LEATHER IN THE WORLD.

Strap leather in grain and split for all purposes.

CORRESPONDENCE SOLICITED

CHICAGO, ILL.
226 West Lake Street

GRAND HAVEN
Michigan

NEW YORK, N. Y.
74 Gold Street

Atholeather

ATHOL MANUFACTURING CO.

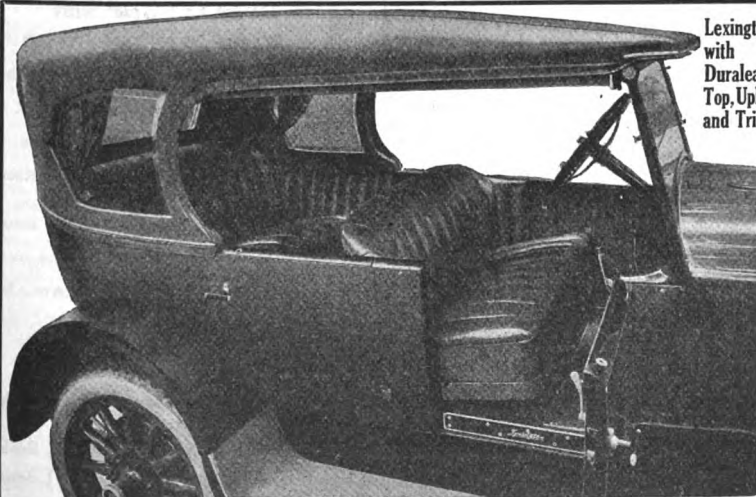
ATHOL, MASS.

MARYSVILLE, MICH.

NEW YORK—DETROIT—CHICAGO—LONDON

Athol Top Material

(Write for Samples)



Lexington Car
with
Duraleather
Top, Upholstery
and Trim

There is a Correct Quality for CALIFORNIA TOPS, UPHOLSTERY, TRIM and BINDINGS IN

Duraleather The Durable
Leather Substitute

THE MASLAND DURALEATHER CO., Manufacturers, Philadelphia, Pa.
W. & J. SLOANE, Sole Selling Agents, 571 5th Ave., New York, 1432 Dime Bank Bldg., Detroit, Mich.,
223 W. Jackson Boulevard, Chicago, Ill.

Please mention The Automobile Trade Directory

LEATHER, Rawhide Lace (Continued)

Hunt Co., Henry C., 261 Franklin St., Boston, Mass.
 Jewell Belting Co., 55 Trumbull St., Hartford, Conn.
 Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
 Missouri Belting Co., 1021-29 S. Grand Ave., St. Louis, Mo. "Victor."
 Mooney Belting Co., 844 W. Sixth St., Cincinnati, O. "Eagle."
 National Leather Co., 161 South St., Boston, Mass.
 National Leather Belt Co., 342 E. 38th St., New York, N. Y.
 Norwich Belt Mfg. Co., N. Main St., Norwich, Conn. "Defiance."
 Rahmann & Co., Geo., 31 Spruce St., New York, N. Y.
 Victor—See Missouri Belting Co.
 Weatherhead-Thompson Co., Pawtucket, R. I.
 Williams & Sons, I. B., 9 Orchard St., Dover, N. H. "Cocheco."

LEATHER STRAPS—See Straps, Leather

LEATHER TOPS—See Tops, Automobile

LEATHER, UPHOLSTERY—See Leather, Artificial; also Leather, Natural

LEATHER WASHERS — See Washers, Leather

LEGGINGS, Motorists

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. "Reliance," "Napoleon," "Toolnone," "Universal," "Boulevard," "Harvard," "National." (See page 303.)
 B. E. Mfg. Co., 210 18th St., Long Island City, N. Y. "Bemco." (See page 299.)
 Bantlin Co., Julius J., Cincinnati, O.
 Bemco—See B. E. Mfg. Co.
 Boulevard—See Atlas Specialty Mfg. Co.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Colt-Cromwell Co., 859 Broadway, New York, N. Y.
 Hagerstown Shoe & Legging Co., Hagerstown, Md.
 Harvard—See Atlas Specialty Mfg. Co.
 Napoleon—See Atlas Specialty Mfg. Co.
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 105.)
 National—See Atlas Specialty Mfg. Co.
 Premier Auto Novelty Mfg. Co., 875 W. Broadway, New York, N. Y.
 Reliance—See Atlas Specialty Mfg. Co.
 Segco—See Syracuse & Eldridge Glove & Legging Co.
 Summers Mfg. Co., 746 S. Los Angeles St., Los Angeles, Cal.
 Syracuse & Eldridge Glove & Legging Co., 1108 Spring St., Syracuse, N. Y. "Segco."
 Toolnone—See Atlas Specialty Mfg. Co.
 Universal—See Atlas Specialty Mfg. Co.
 Willey-Bickford-Sweet Co., 80 Pliny St., Hartford, Conn.

LENSES, DEFLECTING—See Dimmers, Headlight

LENSES, DIFFUSING—See Dimmers, Headlight

LENSES, DIMMING—See Dimmers, Headlight

LENSES, GASKET—See Gaskets, Headlight Lenses

LENSES, ORDINARY LAMP—See Glasses, Lamp

LENSES, SPECIAL—See Dimmers, Headlight

LETTERS, STEEL—See Stamps, Steel

LEVER BALLS—See Balls, Composition Control Lever

LEVER ENGINE STARTERS—See Starters, Manual

LEVER EXTENSIONS—See Extensions, Gear Shift Lever

LEVER GRIPS—See Grips, Throttle and Spark

LEVER LOCKS, EMERGENCY GEAR, FOR FORDS—See Locks, Emergency Gear Lever

LEVER LOCKS FOR FORDS—See Locks, Spark and Throttle Lever

LEVER STARTERS—See Starters, Manual

LEVERS, Brake and Gear Shift

(Finished or Machined Levers. For Levers in the rough—See Castings; also Forgings)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.
 Baker Gun & Forging Co., Batavia, N. Y.
 Brewer Tichener Corp., Cortland, N. Y.
 Brown-Lipe Gear Co., Syracuse, N. Y. (See page 415.)
 Cotta Transmission Co., 2340 11th St., Rockford, Ill.
 Fuller & Sons Mfg. Co., Kalamazoo, Mich.
 Hazard Motor Mfg. Co., 23 Scherer St., Rochester, N. Y.
 Konigsow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 Piper Machine Co., 560-70 N. Elder Ave., Indianapolis, Ind.
 S. A. Machine Co., 2114 E. Woodridge St., Detroit, Mich.
 Warner Gear Co., Muncie, Ind. (See page 419.)

LEVERS, CONTROL—See Levers, Brake and Gear Shift

LEVERS, GEAR SHIFT—See Levers, Brake

LICENSE HOLDERS—See Holders, License

LICENSE NUMBERS — See Numbers, License

LIFT TONGS FOR FORDS—See Tongs, Engine Lift

LIFTERS, STORAGE BATTERY—See Carriers, Storage Battery

LIFTERS, TIRE—See Tools, Tire

Everything is listed under the **NOUN** or principal word

LIFTERS, VALVE—See Rods, Adjustable Valve Lift; also Tools, Valve

LIFTING JACKS—See Jacks, Car; also Jacks, Tire Lifting

LIGHT DEFLECTORS—See Dimmers or Shades, Headlight

LIGHT FUSES—See Fuses, Electric

LIGHT REGULATORS FOR FORDS—See Regulators, Electric Light

LIGHT STANDS—See Lights, Wash Stand

LIGHT SWITCHES—See Switches, Light

LIGHTERS, Acetylene Lamp

(See also Burners, Special Acetylene Lamps)

Adjustable Lighter Co., 18 Pearl St., Newton, Mass.

Feeser Co., Frank S., 1103 Prospect St., Indianapolis, Ind. "Superior."

Superior—See Feeser Co.

LIGHTERS, CIGAR—See Lighters, Electric Cigar

LIGHTERS, Electric Cigar

(For use on car from regular lighting battery)

Aco—See Asch and Co., Inc.

Art Metal Works, Aranson Sq., Newark, N. J. "Ronson," "Paragon," "Wonderliter." (See page 607.)

Asch & Co., Inc., 16-24 W. 61st St., New York, N. Y. "Aco." (See page 247.)

Auto-Spark-Lite—See McAdams Sales Co

Bassick Mfg. Co., 361 W. Superior St., Chicago, Ill. "Shur-Lite." (See page 839.)

Century—See Mabey Electric & Mfg. Co.

Cig-R-Lite—See Electric Automatic Cigar Lighter Co.

Cowles & Co., New Haven, Conn. (See page 451.)

Cuno Engineering Corp., Meriden, Conn. (See page 525.)

Electric Automatic Cigar Lighter Co., 556 W. 27th St., New York, N. Y. "Cig-R-Lite."

Garl Electric Co., 307 Water St., Akron, O.

Genco—See General Scientific Equipment Co.

General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Gohring—See Taylor Co.

Handy—See Picard & Co.

McAdams Sales Co., J. C., 145 W. 63d St., New York, N. Y. (Sole Distributors for Queensboro Tool & Die Co., Long Island City, N. Y. "Auto-Spark-Lite.") (See page 547.)

Mabey Electric & Mfg. Co., 948 Ft. Wayne Ave., Indianapolis, Ind. "Century."

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 221.)

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Paragon—See Art Metal Works.

Picard & Co., A. J., 9 W. 61st St., New York, N. Y. "Handy."

Presto—See Metal Specialties Mfg. Co.

Queensboro Tool & Die Co.—See McAdams Sales Co.

Ronson—See Art Metal Works.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

Seco—See Spielman Electric Co.

Shur-Lite—See Bassick Mfg. Co.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 257.)

Spielman Electric Co., 1981 Broadway, New York, N. Y. "Seco."

Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y. "Gohring."

Wonderliter—See Art Metal Works.

LIGHTERS, Electric Cigar, for Fords

(For use in car and to operate on current from magneto)

Garl Electric Co., 307 Water St., Akron, O.

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)

Presto—See Metal Specialties Mfg. Co.

LIGHTING BATTERIES—See Batteries, Storage

LIGHTING DYNAMOS—See Generators, Electric Lighting

LIGHTING GENERATORS—See Generators, Electric Lighting

LIGHTING PLANTS—See Plants, Farm Lighting

LIGHTING SYSTEMS—See Systems, Electric Lighting

LIGHTS, Curtain

(For Glass Curtain Lights—See Windows, Glass Curtain)

Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."

Auveco—See Auto-Vehicle Parts Co.

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 209.)

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Bemco—See B. E. Mfg. Co.

Brewer Tichener Corp., Cortland, N. Y. "Pioneer."

Buob & Sehen, 500-10 Webster St., Cincinnati, O. "Pioneer." (See page 695.)

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Stik-Tite."

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Co-Zee—See Omaha Auto Top Co.

Decker Mfg. Co., Lincoln Bldg., Detroit, Mich.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "E. Z. In."

E. Z. In—See Ero Mfg. Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Goldin Mfg. Co., 127-31 S. Forsyth St., Atlanta, Ga.

Hodes-Zink Mfg. Co., 313 W. State St., Fremont, O. "Sure-Fit."

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Stik-Tite" Lights.) (See page 179.)

Krinsky, Emil J., 1440 S. Michigan Ave., Chicago, Ill.

McAvoy Mfg. Co., 4535 Fullerton Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

LIGHTS, Curtain (Continued)

Mobile Top Co., 26 Selden Ave., Detroit, Mich.
 Omaha Auto Top Co., Omaha, Neb.
 "Co-Zee." (See page 303.)
 Pioneer—See Brewer Tichener Corp.
 Pioneer—See Buob & Scheu.
 Replace Light Mfg. Co., 2308 Sixth Ave., Rock Island, Ill.
 Saal Co., H. G., 1800 Montrose Ave., Chicago, Ill.
 Stik-Tite—See Cincinnati Auto Specialty Co.
 Sure-Fit—See Hodas-Zink Mfg. Co.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)

LIGHTS, Curtain, for Fords

(Celluloid light or window with fabric or leather binding and special fasteners for replacing damaged rear curtain lights)

A. & E. Auto Top Co., 32-35 E. Cross St., Ypsilanti, Mich. "Standard," "Gypsy."
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3-A-Co."
 Aristocrat—See Ero Mfg. Co.
 Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)
 Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."
 Auveco—See Auto-Vehicle Parts Co.
 Badger—See Wisconsin Top Co.
 Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
 Brewer Tichener Corp., Cortland, N. Y.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Stik-Tite."
 Crawford Mfg. Co., 311 N. Foushee St., Richmond, Va.
 Crystalites—See Haines Mfg. Corp.
 Economy Seat Co., 3122-36 S. Canal St., Chicago, Ill.
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "Aristocrat."
 Ever-Clear—See Pross Mfg. Co.
 Fitzwell—See Niagara Fabric Mfg. Co.
 Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.
 Golden Mfg. Co., 120-32 Marietta St., Atlanta, Ga.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, O.
 Gypsy—See A & E Auto Top Co.
 H & B—See Holmes & Bostrom Bros.
 Haines Mfg. Corp., Osburn House, Rochester, N. Y. "Crystalites." (See page 525.)
 Hastings Mfg. Co., 36 E. Mill St., Hastings, Mich. (See page 521.)
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Stik-Tite® Lights.) (See page 179.)
 Holmes & Bostrom Bros., 365-67 17th Ave., Milwaukee, Wis. "H. & B."
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
 Powers Mfg. Co., Waterloo, Ia. "Three-In-One." (See page 530.)
 Pross Mfg. Co., Grand Rapids, Mich. "Ever-Clear."
 R-E—See Roose Mfg. Co.
 Replace Light Mfg. Co., 2308 Sixth Ave., Rock Island, Ill.

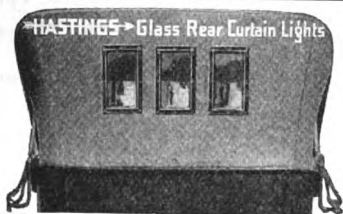
Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E."
 Simon & Co., S. C., 825 N. Second St., Philadelphia, Pa.
 Standard—See A. & E. Auto Top Co.
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
 Stik-Tite—See Cincinnati Auto Specialty Co.
 3-A-Co.—See American Automobile Accessories Co.
 Three-In-One—See Powers Mfg. Co.
 Ustus Products Co., 4042 W. Jefferson St., Detroit, Mich.
 Wisconsin Top Co., Racine, Wis. "Badger." (See page 299.)

LIGHTS, DOME—See Lights, Electric Dome

LIGHTS, Electric Dome

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill. (See page 289.)
 Art Work Shop, 828-36 E. Ferry St., Buffalo, N. Y. (See page 327.)
 Auto Brass Mfg. Co., 3514-20 S. Michigan Ave., Chicago, Ill.
 Campbell Co., A. S., 161 Prospect St. (E. Boston), Boston, Mass. "Cello."
 Carey-McFall Co., 3156 E. Dauphin St., Philadelphia, Pa.
 Cello—See Campbell Co.
 Columbus Auto Brass Co., Columbus, O. (See page 381.)
 Cowles & Co., New Haven, Conn. (See page 451.)
 Diamond H—See Hart Mfg. Co.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Guide Motor Lamp Mfg. Co., Madison Ave., Cleveland, O.
 Hart Mfg. Co., Hamilton St., Hartford, Conn. "Diamond H."
 Holophane Glass Co., 342 Madison Ave., New York, N. Y. (See page 337.)
 Indiana Lamp Co.—See Zinke Co.
 K-S—See Kilborn-Sauer Co.
 Kilborn-Sauer Co., Post Road, Fairfield, Conn. "K-S."
 Liberty Works, Egg Harbor City, N. J. (See page 521.)
 Morse, Frank W., 289 Congress St., Boston, Mass. (See page 221.)
 Moswell Mfg. Co., 175 Grand St., New York, N. Y.
 Mt. Vernon Metal Products Co., Third Ave. & Seventh St., Mt. Vernon, N. Y.
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Roscoe." (See page 459.)
 Shepard Art Metal Co., Detroit, Mich. (See page 451.)
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)
 Sterling Bronze Co., 201 E. 12th St., New York, N. Y.
 Superior Lamp Mfg. Co., 148-50 W. 53d St., New York, N. Y.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.
 Vesta Battery Corp., 3100 Indiana Ave., Chicago, Ill.
 White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind.) (See page 770.)

Everything is listed under the NOUN or principal word

HASTINGS → Glass Rear Curtain Lights

Prices Cut to the Bone!



GLASS REAR CURTAIN LIGHTS FOR FORDS NOW... \$1.65

VOLUME production and lower priced materials have enabled us to reduce the price of this fast selling fall and winter specialty for Fords. Every Ford Owner is a prospect. Replaces the celluloid lights which have become cracked, torn and discolored. The Ford owner can attach them himself in a short time.

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Piston Rings	Battery Boxes
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36 E. Mill Street HASTINGS, MICH.

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Postpaid

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COWL LIGHT WITH PARKING JEWEL

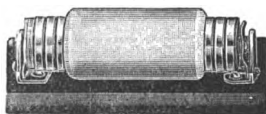


No. 278

Cut Half Size
Size Over All 2"x5 1/4"
Parking Jewel
Red and Green

Cylinder Light with Switch
Size 4"x1 1/4"

No. 254



Revolving Cylinder Turns Light
On or Off

748-282



Size 8"x2 1/4"

Send for Catalog of Auto Vases and Lighting Fixtures, Window Regulators, Collapsible Lunch Tables, Etc.

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150 West 52nd St., New York

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Please mention The Automobile Trade Directory

LIGHTS, Electric Flash*(Portable Flash or Pocket Lights or Lanterns)*

American Carbon & Battery Co., East St. Louis, Ill.
 American Ever Ready Works of National Carbon Co., 303 Thompson Ave., Long Island City, N. Y. "Eveready."
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for "Presto" Lights.) (See page 247.)
 Bailey Co., W. J., Newark, N. J. "Midget."
 Burielgh, Geo. K., Penacook, N. H. "Fire Fly."
 Delta Electric Co., 313-405 E. Fourth St., Marion, Ind.
 Diamond Electric Specialties Corp., 101-03 S. Orange Ave., Newark, N. J.
 Dressel Mfg. Corp., 3376 Park Ave., New York, N. Y.
 Electro-Automate—See Elsaesser & Watts.
 Elsaesser & Watts, 136 Liberty St., New York, N. Y. "Electro-Automate." (Importers.) (See page 521.)
 Eveready—See American Ever Ready Works.
 Federal Sign System, Lake & Desplaines Sta., Chicago, Ill.
 Fire Fly—See Burielgh, Geo. K.
 Franco Electric Corp., 104 S. Fourth St., Brooklyn, N. Y.
 French Battery & Carbon Co., Madison, Wis. "Ray-O-Lite."
 Grether Fire Equipment Co., 312-14 E. Second St., Dayton, O.
 Hipco—See Hipwell Mfg. Co.
 Hipwell Mfg. Co., 825-35 North Ave., Pittsburgh, Pa. "Hipco."
 Kwick-Lite Electric Corp., 360 Kearny St., San Francisco, Cal. "Red Light."
 Kwik-Lite—See Usona Mfg. Co.
 Metal Specialties Mfg. Co., 335-53 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)
 Midget—See Bailey Co.
 Novo Mfg. Co., 424 W. 23d St., New York, N. Y.
 O-U-Lyte—See Weder Co.
 Presto—See Metal Specialties Mfg. Co.
 Ray-O-Lite—See French Battery & Carbon Co.
 Red Light—See Kwick-Lite Electric Corp.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)
 Universal Carbon Co., First St. & Riverside Ave., Dundee, Ill.
 Usona Mfg. Co., 1 Hudson St., New York, N. Y. "Kwik Lite."
 Weder Co., 4545 Germantown Ave., Philadelphia, Pa. "O-U-Lyte."

LIGHTS, ELECTRIC GAGE—See Lamps, Electric Dash

LIGHTS, ELECTRIC HEAD—See Headlights, Electric

LIGHTS, DOME—See Lights, Electric Dome

LIGHTS, GAGE—See Lamps, Electric Dash

LIGHTS, HEAD—See Lamps, Acetylene; also Headlights, Electric

LIGHTS, Parking

(Special Electric or Oil Lamps for attachment to Wind Shield or Fender to be used instead of regular lamp equipment when car is parked.)

Acme—See Auto Specialty Co.

Acorn Motor Equipment Corp., 44 Penn St., Brooklyn, N. Y. "Hadco." (See page 121.)

Ald Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. (See page 289.)

Alexander Microscope Co., 1991 Broadway, New York, N. Y. "Microscope." (See page 587.)

American Auto Lamp Co., 20 Desbrosses St., New York, N. Y. "Yankee." "Rialto."

Arjo Mfg. Co., 114 W. Mt. Royal Ave., Baltimore, Md. "3 Way."

Auto Specialty Co., 201 N. Broad St., Philadelphia, Pa. "Acme."

Beauty—See Hawthorne Lamp Works.

C-S—See Culver-Stearns Mfg. Co.

Cowles & Co., C., New Haven, Conn. (See page 451.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass. "C-S."

General Machine & Specialty Co., 1705 W. Baltimore St., Baltimore, Md. "Groco."

Groco—See General Machine & Specialty Co.

Hadco—See Acorn Motor Equipment Corp.

Hawthorne Lamp Works, 1410 Michigan Ave., Chicago, Ill. "Supreme." "Beauty."

Johnson Sons Co., T. S., 622-26 Cherry St., Philadelphia, Pa.

K-D Lamp Co., 108-10 W. Third St., Cincinnati, O.

Lor—See Price Automotive Specialties Co.

Lyon Mfg. Co., 2 E. Lombard St., Baltimore, Md. "Victory."

Mirror Park-Lite Corp., 208 W. 17th St., New York, N. Y. "Park-Lite."

Microscope—See Alexander Microscope Co.

Moto-Meter Co., Long Island City, N. Y. (See page 585.)

Park-Lite—See Mirror Park-Lite Corp.

Perko—See Perkins Marine Lamp Corp.

Perkins Marine Lamp Corp., 1943 Pitkin Ave., Brooklyn, N. Y. "Perko."

Price Automotive Specialties Co., 201 N. Broad St., Philadelphia, Pa. "Lor."

Rialto—See American Auto Lamp Co.

Radia Products Co., Baltimore, Md.

Rosco—See Rosen & Co.

Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)

Supreme—See Hawthorne Lamp Works.

Taylor & Co., 206 Wells St., Milwaukee, Wis.

3 Way—See Arjo Mfg. Co.

Victory—See Lyon Mfg. Co.

Yankee—See American Auto Lamp Co.

LIGHTS, POCKET—See Lights, Electric Flash

LIGHTS, REEL—See Lamps, Electric Hand; also Lights, Spot

LIGHTS, Spot

(For attachment to Wind Shield)

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill. (See page 289.)

American Auto Lamp Co., 20 Desbrosses St., New York, N. Y. "Yankee."

Anchor-Lox Co., 611 N. Capital Ave., Fort Wayne, Ind.

Anderson Electric & Equipment Co., 154-60 Whiting St., Chicago, Ill. "Autoreelite."

Aristocrat—See Raydex Mfg. Co.

Auto-O-eye—See Lipman Pump Works.

Auto-Ray—See Edelmann & Co.

Autoreelite—See Anderson Electric & Equipment Co.

B. & L. Auto Lamp Co., 193-05 Mott St., New York, N. Y.

Beamolite—See Motor Specialties Co.

Bear—See Thomas Mfg. Co.

Everything is listed under the NOUN or principal word

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Send for our complete catalog carrying a large number of quick selling accessories and many garage and workshop necessities—all with the guarantee of the name "Edelmann," nationally known in the automotive field.

A FEW OF THE EDELMANN PRODUCTS

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May also be used as spotlight. One piece, silver plated reflector throws clear white light. Handle switch control, simple, powerful and easily adjustable. Weight complete, 2 lbs. Price, with 6 feet of cord. List price, \$6.50. Diameter of lamp, 6 inches.

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COMBINATION GREASE AND OIL GUN



Made entirely of brass. 2-inch barrel. Holds 15 oz. hard grease. Quickly changed from oil to grease by a single operation.

Many other valuable features which make this the most efficient and durable grease gun on the market. List price, \$2.75.

"SWING-SPOUT" OIL MEASURE



A real won't-leak device for car owners, garages and service stations. Clean and economical as no oil can be spilled. Lets oil out of the bottom

through a regulating valve. Combination funnel measure and offset funnel. List price, 1 quart, \$2.25; 2 quarts, \$3.00.

A succeeding issue of the Automobile Trade Directory will show and briefly describe several other items of the Edelmann line. There are others not described that will also merit investigation. Write for catalog, full description, jobber and dealer discounts, etc.

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A new big feature of the Edelmann line meets every requirement of the motorist. May be quickly converted into trouble light. Diameter of lamp, 4½ inches. One piece shell reflector. Silver plated. 6 feet of cord. List price, \$5.00.



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Ornamental and more convenient than the ordinary cap. Comes in several numbers to fit cars of practically all known makes. List price, \$2.50.

"BREAKNOT"

STORAGE BATTERY TESTER



Every car owner whose car is equipped with a storage battery should own and use the "Break-Not." All manufacturers of storage batteries strongly advocate the frequent "Hydrometer Test" as the only means of prolonging the life of a storage battery. No instrument is as well adapted, as accurate and as durable for the automobilist's requirements as the "Break-Not." Price, \$1.25.

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U. S. A.

Please mention The Automobile Trade Directory

LIGHTS, Spot (Continued)

Brown Mfg. Co., Jno. W., Columbus, O. (See page 507.)
Cellbeam Mfg. Co., 244 W. 57th St., New York, N. Y.
Cincinnati Lamp & Bracket Co., 312 W. Fourth St., Cincinnati, O.
Clamert Mfg. Co., 237 Jefferson St., Latrobe, Pa.
Cor-Co-Lite—See Corcoran Lamp Co.
Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
Corcoran-Victor Co., 712 Reading Rd., Cincinnati, O. "Victor."
Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
Dandy—See K-D Lamp Co.
De Luxe—See Zinke Co.
Delight—See K-D Lamp Co.
Delta Electric Co., 213-405 E. Fourth St., Marion, Ind.
Dunn Accessories Co., Indianapolis, Ind.
Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Auto-Ray," "Rex." (See page 523.)
Edmunds & Jones Corp., 4440 Lawton Ave., Detroit, Mich.
Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 429.)
Fire Spot—See Kaufmann & Sons.
Flexlight—See Trolley Supply Co.
Fowler Lamp & Mfg. Co., 61 E. 24th St., Chicago, Ill.
Fox—See Thomas Mfg. Co.
Gillilan Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal. "Westerner."
Howe Lamp & Mfg. Co., 3656 N. Francisco Ave., Chicago, Ill.
Indiana Lamp Co.—See Zinke Co.
K-D Lamp Co., 108-10 W. Third St., Cincinnati, O. "Delight," "Dandy."
K-S—See Kilborn-Sauer Co.
Kaufmann & Sons, Chas., 1623 E. First St., Santa Ana, Cal. "Silverbeam," "Fire Spot."
Kay Bee Mfg. Co., 312 W. 35th St., Los Angeles, Cal.
Kilbourn-Sauer Co., Post Road, Fairfield, Conn. "K-S."
L'Eclairer—See Superior Lamp Mfg. Co.
Lipman Pump Works, 100 Shirland Ave., Beloit, Wis. "Aut-O-eye."
Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.
Mecca—See Rubber Sales Co.
Motor Specialties Co., Beaver St., Waltham, Mass. "Beamolite."
Owl—See Thomas Mfg. Co.
Parabolite—See Pittsburgh Electric Specialties Co.
Pittsburgh Electric Specialties Co., 294 Broadway, New York, N. Y. "Parabolite."
Pittsburgh Lamp, Brass & Glass Co., Liverpool & River Sta., Pittsburgh, Pa. "Superior."
Raydex Mfg. Co., Brackenridge, Pa. "Autocrat."
Red Spot—See Wakefield Brass Co.
Rex—See Edelmann & Co.
Rosco—See Rosen & Co.
Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)
Rubber Sales Co., 431 S. Dearborn St., Chicago, Ill. "Mecca."
S & M Lamp Co., 117 W. 38th Pl., Los Angeles, Cal.

Silverbeam—See Kaufman & Sons.
Standard Corp., Outlook Bldg., Columbus, O.
Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)
Sunbeam Mfg. Co., Polson Bldg., Seattle, Wash.
Superior—See Pittsburgh Lamp, Brass & Glass Co.
Superior Lamp Mfg. Co., 148-50 W. 53d St., New York, N. Y. "L'Eclairer."
Thomas Mfg. Co., 1410-12 Dearborn St., Seattle, Wash. "Fox," "Owl," "Bear."
Trolley Supply Co., Canton, O. "Flexlight."
Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.
Victor—See Corcoran Victor Co.
Wakefield Brass Co., F. W., Vermillion, O. "Red Spot." (See page 525.)
Westerner—See Gillilan Bros. Smelting & Refining Co.
Williams Mfg. Co., 121-25 W. 35th St., Los Angeles, Cal. (See page 525.)
Yankee—See American Auto Lamp Co.
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Indiana Lamp Co., Connersville, Ind. "De-Luxe.") (See page 770.)

LIGHTS, Spot, for Fords

(For attachment to Wind Shield)

Cincinnati Lamp & Bracket Co., 312 W. Fourth St., Cincinnati, O.
Cor-Co-Lite—See Corcoran Lamp Co.
Corcoran Lamp Co., Thomas J., 4900 Spring Grove Ave., Cincinnati, O. "Cor-Co-Lite."
Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
Delta Electric Co., Marion, Ind.
Detroit Starter Co., 612 E. Jefferson St., Detroit, Mich. "Dynolite."
Dunn Accessories Co., Indianapolis, Ind.
Dynolite—See Detroit Starter Co.
Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributors for Culver-Stearns Lamps.) (See page 429.)
Kay Bee Mfg. Co., 312 W. 35th St., Los Angeles, Cal.
Standard Corp., Outlook Bldg., Columbus, O.
Sunbeam Mfg. Co., Polson Bldg., Seattle, Wash.
Williams Mfg. Co., 121-25 W. 35th St., Los Angeles, Cal. (See page 525.)

LIGHTS, TROUBLE—See Lamps, Electric Hand; also Lights, Spot**LIGHTS, Wash Stand**

(For lighting car on wash stand)

Coffin Valve Co., Tolman St., Neponset, Mass. "Neponset."
Muller, Edward, 5031 Hudson Blvd., West New York, N. J.
Neponset—See Coffin Valve Co.
Universal Electric Stage Lighting Co., 240 W. 50th St., New York, N. Y.

LIMIT GAGES—See Gages, Limit**LIMOUSINE LIGHTS—See Lights, Electric Dome****LIMOUSINE TELEPHONES—See Telephones, Limousine**

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"RED SPOT" DOUBLE DUTY SPOTLIGHTS

Red for danger—white for safety. The "Red Spot" lights embody both. The rays from the "silver lined" reflector, which cannot tarnish from seepage, nor easily dent, give the driver a broad pathway of white light. A red "passing light," an exclusive "Red Spot" feature, enables oncoming drivers to gauge their clearance. The "Red Spot" serves as a high grade, efficient, powerful, and rattleproof spotlight.

1713—Without mirror or passing light\$5.00
 1726—Without mirror, with passing light\$5.25

1716—With mirror, without passing light\$5.50
 1727—With both mirror and passing light\$5.75

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The Improved
GLASS REAR CURTAIN LIGHTS
 For Fords
QUALITY Item at a Ford Price

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Wood and Glass Enclosure for Fords
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CUNO Auto Cigar Lighter**CUNO Auto Smoking Set****CUNO Ford Timer****CUNO Starting Switch****CUNO Extension Night Lamp****CUNO Combination Tonneau and Trouble Light****CUNO Combination Dash and Trouble Light****CUNO Tonneau and Step Light***Write for circular and prices*

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The reflector is the crux of a Spotlight. The WILLIAMS reflector is made from best brass, hand spun and silver plated. A lightweight spotlight for SAFETY and EFFICIENCY. Unqualified Guarantee on WILLIAMS SPOTLIGHTS.

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List Prices	Model	Black Enamel Nickel Plated	
	"A"—6-inch	\$7.00	\$ 8.50
	"B"—7-inch	8.00	10.00
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	"C"—Special	5.00	

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121-125 W. 35th St.

LOS ANGELES, CALIF.

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LIMOUSINE ROOF VENTILATORS—See Ventilators, Limousine Roof

LIMOUSINE VENTILATORS—See Ventilators, Limousine and Fore-door

LIMOUSINE WATCHES—See Watches, Limousine

LINED HOSE—See Hose, Metal Lined

LINING, Body or Frame

(For use between body sill and steel frame to prevent squeaking)

A-B-C—See American Brake-Lining Co.

American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 533.)

American Mills Co., 39 W. 19th St., New York, N. Y.

American Mills Co. of N. Y., 433 Broadway, New York, N. Y.

Bond Co., Charles, 617 Arch St., Philadelphia, Pa. "Fabrutex."

Deco—See Dafeo-Eustice Co.

Dafeo-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Deco," "Ustus."

Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Fabrutex—See Bond Co.

Felters Co., Millbury, Mass. (See page 933.)

Flintkote Co., 88 Pearl St., Boston, Mass. "Rex."

Gilmer Co., L. H., Philadelphia, Pa. (See pages 116 and 117.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind.

Horton Corp., F. L., 86 Whittier St., Roxbury, Mass. (See page 531.)

Jaleau—See Uniform Hood Lace Co.

Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)

McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Rubber-ite."

Multibestos Co., Walpole, Mass. (See page 527.)

National Felt Co., Easthampton, Mass.

Powers Mfg. Co., Waterloo, Ia. (See page 530.)

Rex—See Flintkote Co.

Rochester Woven Belting Corp., Commercial St., Rochester, N. Y. "Tuflex."

Rubber-ite—See McElroy Belting & Hose Co.

Rusco—See Russell Mfg. Co.

Russell Mfg. Co., Middletown, Conn. "Rusco." (See page 530.)

Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 115.)

Tuflex—See Rochester Woven Belting Corp.

Uniform Hood Lace Co., 1609 College Ave., Indianapolis, Ind. "Jaleau."

Ustus—See Dafeo-Eustice Co.

Western Felt Works, 4031-4115 Ogden Ave., Chicago, Ill.

LINING, Brake

(For lining brakes or clutches—See also Leather, Friction; also Belting, Leather; also Fibre, Hard)

A-B-C—See American Brake-Lining Co.

Advance Automobile Accessories Corp., 1721 Prairie Ave., Chicago, Ill. "White Stripe."

Advance Packing & Supply Co., 84 E. Lake St., Chicago, Ill. "Brakebestos," "Bestalite."

Ajax—See Asbestos & Rubber Works of America.

Allbestos Corp., Belfield Ave. & Fishers Lane, Philadelphia, Pa. (See page 533.)

Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y.

Ambesco—See American Asbestos Co.

Ambler Autobestos—See Keasbey & Mattison Co.

American Asbestos Co., Norristown, Pa. "Ambesco," "Testbestos." (See page 531.)

American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 533.)

American Mills Co., 39 W. 19th St., New York, N. Y. "Fermanite."

Anchor Packing Co., 72 Murray St., New York, N. Y. "Ankorite."

Ankorite—See Anchor Packing Co.

Appley & Co., T. H., 107 N. Franklin St., Syracuse, N. Y. "Trubestos."

Arno—See Cincinnati Rubber Mfg. Co.

Asbestite—See Majestic Auto Products Corp.

Asbestos & Rubber Works of America, 1819 Broadway, New York, N. Y. "Motobestos," "Ajax." (See page 530.)

Autobestos—See Keasbey & Mattison Co.

Axwell Equipment Co., 214 Wood St., Pittsburgh, Pa.

Bestalite—See Advance Packing & Supply Co.

Bestbestos—See Federal Asbestos Co.

Blue Edge—See Woven Steel Hose & Rubber Co.

Brakebestos—See Advance Packing & Supply Co.

Cincinnati Rubber Mfg. Co., Cincinnati, O. "Arno." (See page 475.)

Consolco—See Consolidated Packing Co.

Consolidated Packing & Supply Co., 21 Barclay St., New York, N. Y. "Consolco." (See page 651.)

Curry Co., J. W., 2615 Cummins St., Cincinnati, O.

Diamond N—See Norristown Magnesia & Asbestos Co.

Dominion Asbestos & Rubber Corp., 154 Nassau St., New York, N. Y. "Griptite." (See page 609.)

Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."

Dural Rubber Corp., Flemington, N. J. (See page 349.)

Durwylan Co., 47 Rye St., Paterson, N. J. "Wirebestos."

Dyrabestos—See United Asbestos & Packing Co.

Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (New Jersey Distributor for "J-M Non-Burn" Lining.)

(See page 495.)

Elektra—See Horton Mfg. Co.

Erbestos Brake Lining Co., 242 N. 17th St., Philadelphia, Pa.

Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.

Ever Ready—See Kelso Mfg. Co.

Federal Asbestos Co., 149 Hamburg Ave., Paterson, N. J. "Bestbestos."

Garco—See General Asbestos & Rubber Co.

Gelsel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa. "Perfection."

General Asbestos & Rubber Co., Charleston, S. C. "Garco."

Globestos—See United & Globe Rubber Co.

Griptite—See Dominion Asbestos & Rubber Corp.

Hartman Products Co., Dime Bank Bldg., Detroit, Mich.

Horton Corp., F. L., 36 Whittier St., Roxbury, Mass. "Elektra." (See page 531.)

J-M Non-Burn—See Johns-Manville Co.

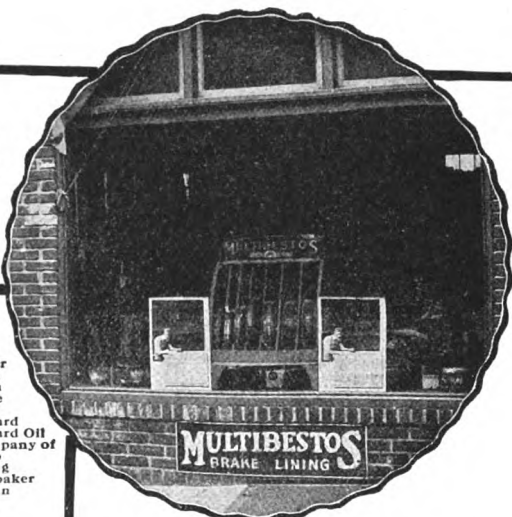
Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M Non-Burn."

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dow. Why don't you?

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CARS	Atco	Selden
Ambassador	Atterbury	Seneca
Beggs	Available	Service
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Birch	Brockway	Standard
Briscoe	Buffalo	Standard Oil
Cadillac	Capitol	Company of
Chandler	Clydesdale	Ohio
Cleveland	Collier	Sterling
Columbia	Concord	Studebaker
Common-	Conestoga	Sullivan
wealth	Dart	Super
Crow-Elkhart	Day-Elder	Texas
Cunningham	Dearborn	Timin
Daniels	Dependable	Tower
Detroit Electric	Detroit	Twin City
Dixie	Diamond T	Vellie
Dodge Bros.	Dodge Bros.	Watson
Dorris	Dorris	Wilcox Trux
Hanson	Erle	TRACTORS
Haynes	Fageol	Avery
H. C. S.	Federal	Bailor
Hupmobile	Ford	Boring
Jones	Gabriel	Chase
Jordan	Garford	Dauch
Liberty	G-M-C	Emerson-
Lincoln	Giant	Brantling-
Malbohm	H. R. L.	ham
Maxwell	Hahn	G-O
McFarlan Six	Hal-Fur	Hart-Parr
McLaughlin	Hall	Illinois Super
Millburn Elec-	Hendrickson	Drive
tric	Hewitt-Ludlow	Indiana
Mitchell	Huffman	Liberty
Moore	Independent	Massey-Harris
Noma	Jackson	Moline-
Olympian	Kalamazoo	Universal
Owen-	Kelly-	Monarch
Magnetic	Springfield	National
Pan-American	Kissel	Parrett
Piedmont	Freighter	Samson
Pierce-Arrow	Kleiber	Waterloo Boy
Re Vere	Lippard-	AXLES
R & V Knight	Stewart	Eaton
Saxon	Luedinghaus	Peru
Seneca	Maccar	Spacke
Simples	Mack	Standard
Standard	Master	Timken
Stanley	Maxwell	Detroit
Studebaker	Menges	Torbenson
Texas	Menominee	Vulcan
Vellie	Mutual	Wisconsin
Westcott	National	MOTOR-
Wills Sainte-	Natco	CYCLES
Claire	Norwalk	Excelsior
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OF 225 cars and trucks recently in-
spected by the police of Detroit for
brake efficiency, only 6 were found to be
in perfect condition.

How many of the other "219" in *your*
town are *you* cashing in on? You know
the profit in relining brakes. Here are
three ways to get it.

1. Talk *brakes* and *safety* to every cus-
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we'll send the story.)
2. Put the story on the walls of your
garage. *Tell 'em once more!* (Let us
know how many signs you can use.)
3. Tell 'em *again* in your local newspaper.
(What size ads do you want? Yours
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LINING, Brake (Continued)**K. H. K.—See Kay Co.****Kay Co.,** Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K."**Keasbey & Mattison Co.,** Butler Ave., Ambler, Pa. "Ambler Autobestos." (See page 77.)**Kelso Mfg. Co.,** Trenton, N. J. "Ever Ready." (See page 533.)**Lins Mfg. Co.,** W. R. (Roxborough), Philadelphia, Pa. "Linsco."**Linsco—See Lins Mfg. Co.****Longwear—See Wearwell Gasket & Packing Co.****McElroy Belting & Hose Co.,** 276-300 Truman St., Hammond, Ind. "Rubbestos."**Majestic Auto Products Corp.,** 2 Columbus Circle, New York, N. Y. "Asbestite."**Mikesell Brothers Company,** 156 N. La Salle St., Chicago, Ill. "Superbestos." (See page 530.)**Modern Belt & Web Co.,** Emerson Tower Bldg., Baltimore, Md.**Moto-Bestos—See Asbestos & Rubber Works of America.****Multibestos Co.,** Walpole, Mass. (See page 527.)**Norristown Magnesia & Asbestos Co.,** Norristown, Pa. "Diamond N."**Perfection—See Gelsel Co.****Permanite—See American Mills Co.****Raybestos Co.,** Bridgeport, Conn. (See page 528.)**Reliance—See Dugas-Hundley Corp.****Rochester Woven Belting Corp.,** Commercial St., Rochester, N. Y. "Tuftex."**Rossendale-Reddaway Belting & Hose Co.,** 39 W. 19th St., New York, N. Y.**Rubbbestos—See McElroy Belting & Hose Co.****Rusco—See Russell Mfg. Co.****Russell Mfg. Co.,** Middletown, Conn. "Rusco." (See page 530.)**S-M-C—See Staybestos Mfg. Co.****Scandinavia Belting Co.,** 106 Reade St., New York, N. Y.**Shepard Circular Fabric Co.,** 7-11 Summer St., Worcester, Mass.**Smith Belting Co.,** Manning J., 39 E. Ashmead St., Philadelphia, Pa. (See page 115.)**Standard Brake Lining Co.,** Wilkins St., Hudson, Mass.**Staybestos Mfg. Co.,** Germantown Ave. & Berkley St., Philadelphia, Pa. "S-M-C," "Universal."**Sterling Asbestos Co.,** 625 Decatur St., Brooklyn, N. Y.**Superbestos—See Mikesell Brothers Company.****Teatbestos—See American Asbestos Co.****Thermoid Rubber Co.,** Trenton, N. J. (See page 531.)**Trubestos—See Appleby & Co.****Tuftex—See Rochester Woven Belting Corp.****United Asbestos & Packing Co.,** Chicago, Ill. "Dyrabestos."**United & Globe Rubber Co.,** Prospect & Frasier Sts., Trenton, N. J. "Globestos."**Universal—See Staybestos Mfg. Co.****Vogt Mfg. Corp.,** 408 St. Paul St., Rochester, N. Y.**Wearwell Gasket & Packing Co.,** Camden, N. J. "Longwear."**White Stripe—See Advance Automobile Accessories Corp.****Wirebestos—See Durwyllan Co.****Woven Steel Hose & Rubber Co.,** Dale St., Trenton, N. J. "Blue Edge."**LINING, Brake, for Fords***(For lining brake bands and transmission bands)***A-B-C—See American Brake-Lining Co.****Acme—See Appleby & Co.****Acme—See Potter-Lovell Co.****Advance Automobile Accessories Corp.,** 1721 Prairie Ave., Chicago, Ill. "White Stripe."**Advance Packing & Supply Co.,** 64 E. Lake St., Chicago, Ill. "Brakebestos."**Alltex Weaving & Specialty Co.,** 212 Broadway, New York, N. Y.**Ambesco—See American Asbestos Co.****Ambler Autobestos—See Keasbey & Mattison Co.****American Asbestos Co.,** Norristown, Pa. "Valley Forge," "Ambesco." (See page 531.)**American Brake-Lining Co.,** Lansdale, Pa. "A-B-C," "Wales." (See page 533.)**American Mills Co.,** 39 W. 19th St., New York, N. Y. "Duratex," "Standard."**American Mills Co. of N. Y.,** 438 Broadway, New York, N. Y. "Tufweb."**American Republics Products Co.,** New York, N. Y. "Puro Best."**Appleby & Co.,** T. H., 107 N. Franklin St., Syracuse, N. Y. "Acme," "Trubestos."**Arno—See Cincinnati Rubber Mfg. Co.****Asbestite—See Majestic Auto Products Corp.****Asbestos & Rubber Works of America,** 1819 Broadway, New York, N. Y. "Moto-Bestos." (See page 530.)**Autobestos—See Keasbey & Mattison Co.****Axwell Equipment Co.,** 214 Wood St., Pittsburgh, Pa.**Bond Co.,** Charles, 617 Arch St., Philadelphia, Pa. "Fabrutex."**Brakebestos—See Advance Packing & Supply Co.****Buffalo Weaving & Belting Co.,** Buffalo, N. Y. (See page 941.)**Bull Dog—See Reardon Co.****Burlington Basket Co.,** 600 N. Main St., Burlington, Iowa. "Everlasting."**Cincinnati Rubber Mfg. Co.,** Cincinnati, O. "Arno." (See page 475.)**Consolco—See Consolidated Packing & Supply Co.****Consolidated Packing & Supply Co.,** 21 Barclay St., New York, N. Y. "Consolco." (See page 651.)**Couch Bros. Mfg. Co.,** East Point, Atlanta, Ga.**Daleway—See Rossendale-Reddaway Belting & Hose Co.****Dependon Auto Specialty Co.,** 1408-10 Michigan Ave., Chicago, Ill. "Triplex."**Dominion Asbestos & Rubber Corp.,** 154 Nassau St., New York, N. Y. "Griptite." (See page 609.)**Durabestos—See United Asbestos & Packing Co.****Dural Rubber Corp.,** Flemington, N. J. (See page 349.)**Duratex—See American Mills Co.****Durwyllan Co.,** 47 Rye St., Paterson, N. J. "Wirebestos."**Economy Auto Supply Co.,** 268 Halcy St., Newark, N. J. (New Jersey Distributors for "J-M Non-Burn" Lining.) (See page 495.)**Essex Rubber Co.,** May & Bleakes Sts., Trenton, N. J.**Ever Ready—See Kelso Mfg. Co.****Everlasting—See Burlington Basket Co.****Fabrutex—See Bond Co.****Federal Asbestos Co.,** 149 Hamburg Ave., Paterson, N. J. "Fordbestos."**Ford Mfg. Co.,** Howard, Coldwater, Mich.**Fordbestos—See Federal Asbestos Co.****Garco—See General Asbestos & Rubber Co.**

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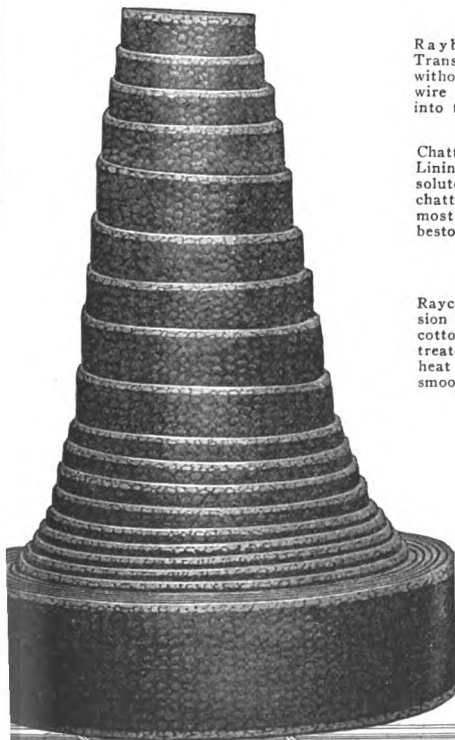
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Raybestos Molded Clutch Facing is displacing woven facings everywhere, because of better performance and longer life.



Raybestos Brakes are built to specifications. We have been brake specialists since the beginning of the industry.



Raybestos Lined Cold Rolled Steel Cam Brakes for Ford Cars are so made that the lined surface bears on the inside of the brake drum.



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Raybestos Lined Internal Cam Brakes are specially constructed to replace the regular equipment.



Raybestos for Ford Transmissions is made without wire to prevent wire particles getting into the magneto.



Chatterless Transmission Lining for Ford Cars absolutely eliminates the chatter and wears almost as well as Raybestos.



Rayco Ford Transmission Lining is a woven cotton material that is treated to withstand heat and gives very smooth action.



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"THE PERFECT WEAVE—
CHEMICALLY TREATED"

Powers Norwegian Transmission Lining

FOR FORD CARS

THIS extra-quality lining is made of selected long fibre cotton, substantial yet pliable. A special process and compound makes it resist oil, grease, water, gasoline and heat. Can be worn down to the thickness of paper without raveling or losing its grip.

Chatter, jerky, jumpy and uncertain starting and stopping is completely eliminated and every stop is smooth and silent.

Packed in a neat carton—three pieces of proper length with rivets. Also supplied in 100 foot rolls.

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The Powers Line Includes Tire Covers, Fan Belts, Radiator Covers, Etc.



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"Superbestos" Wire Inserted Compressed Brake Lining.
"Superbestos" Wire Inserted Woven Brake Lining.
"Superbestos" Folded and Stitched Clutch Facings.
"Superbestos" Moulded Clutch Facings.
"Holdwell" Ford Transmission Lining, Treated or Untreated.
"Rattleproof" Ford Transmission Lining, Treated or Untreated.
"Pylox" Waterproof Automotive Covers.
"Milbroco" Spark Plug Yarn.
"Ronuk" Asbestos Metallic Red and Black Sheet Packing.
"Wabash" Twisted Valve Stem Packing.
"Wabash" Corrugated Running Board Mats.

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Rusco Denonco Non-Chatter Bands for Fords

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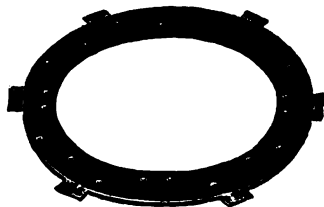


**RUSCO
PRODUCTS**

Moto-Bestos

"Quick Stop"

**Woven Brake Lining
AND**



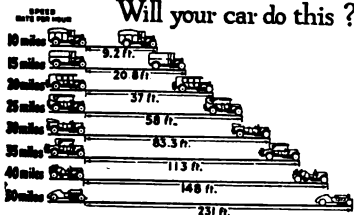
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Traffic jams from 9,000,000 cars

OVER three times as many cars crowd-ing the roads today as in 1915—8,000,000 as compared with 2,500,000. Are your customers' brakes in proper condition to meet congested traffic? Make brake inspection an important part of every overhaul job. It will build good-will and increase your profits.

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BRAKE LINING
AND
CLUTCH FACINGS**

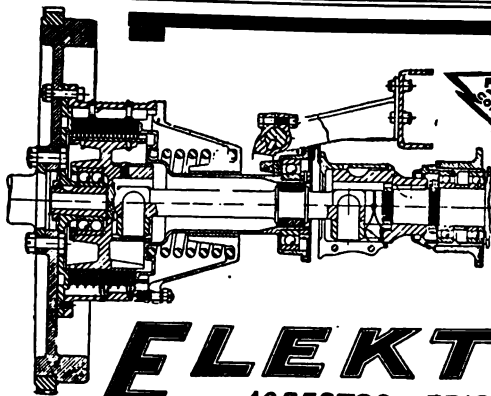


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Gelsel Co., Otto E., 3200-06 Oxford St., Philadelphia, Pa. "Perfection."
 General Asbestos & Rubber Co., Charleston, S. C. "Garco."
 Gilmer Co., L. H., Philadelphia, Pa. (See pages 116 and 117.)
 Globestos—See United & Globe Rubber Co.
 Griptite—See Dominion Asbestos & Rubber Corp.
 Hebert Mfg. Co., 575 Central St., Franklin, N. H.
 Hold-Fast—See Illinois Rubber Tire Co.
 Holdwell—See Mikesell Brothers Company.
 Illinois Rubber Tire Co., 1803 Michigan Ave., Chicago, Ill. "Hold-Fast."
 J-M Non-Burn—See Johns-Manville Co.
 Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M Non-Burn."
 K. H. K.—See Kay Co., K. H.
 Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K. H. K."
 Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Ambler Autobestos." (See page 77.)
 Kelso Mfg. Co., Trenton, N. J. "Ever Ready." (See page 533.)
 Krego—See Krieger & Son.
 Krieger & Son, E., Tompkins Ave. & Quincy St., Brooklyn, N. Y. "Krego."
 Libby Auto Products Co., 522 Fifth Ave., New York, N. Y.
 Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
 Linsco—See Lins Mfg. Co.
 Longwear—See Wearwell Gasket & Packing Co.
 McElroy Belting & Hose Co., 276-300 Truman St., Hammond, Ind. "Zebra."
 Majestic Auto Products Corp., 2 Columbus Circle, New York, N. Y. "Asbestite."
 Mikesell Brothers Company, 156 N. La Salle St., Chicago, Ill. "Holdwell," "Rattleproof." (See page 530.)
 Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
 Moto-Bestos—See Asbestos & Rubber Works of America.
 Perfection—See Gelsel Co.
 Permanite—See Rossendale-Reddaway Belting & Hose Co.
 Potter-Lovell Co., Potter Brook, Pa. "Acme."
 Powers Mfg. Co., Waterloo, Ia. (See page 530.)
 Puro Besto—See American Republics Products Co.
 R-E—See Roose Mfg. Co.
 Rattleproof—See Mikesell Brothers Company.
 Raybestos Co., Bridgeport, Conn. (See page 529.)
 Raydex Mfg. Co., Brackenridge, Pa.
 Reardon Co., 309 State St., Peoria, Ill. "Bull Dog."
 Reflex Mfg. Co., 622 Harrison St., Fort Wayne, Ind.
 Rochester Woven Belting Corp., Commercial St., Rochester, N. Y. "Tuflex."
 Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E."
 Rossendale-Reddaway Belting & Hose Co., 39 W. 19th St., New York, N. Y. "Standard," "Permanite."
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., Middletown, Conn. "Rusco." (See page 530.)
 S-M-C—See Staybestos Mfg. Co.
 Scandinavia Belting Co., 106 Reade St., New York, N. Y.
 Smith Belting Co., Manning J., 30 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 115.)

Standard—See American Mills Co.
 Standard—See Rossendale-Reddaway Belting & Hose Co.
 Standard Brake Lining Co., Wilkins St., Hudson, Mass.
 Staybestos Mfg. Co., Germantown Ave. & Berkley St., Philadelphia, Pa. "Universal," "S-M-C."
 Sterling Asbestos Co., 625 Decatur St., Brooklyn, N. Y.
 Thermoid Rubber Co., Trenton, N. J. (See page 531.)
 Triplex—See Dependon Auto Specialty Co.
 Trubestos—See Appleby & Co.
 Tuflex—See Rochester Woven Belting Corp.
 Tufweb—See American Mills Co. of New York.
 United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J. "Globestos."
 United Asbestos & Packing Co., 629 Washington Blvd., Chicago, Ill. "Durabestos."
 Universal—See Staybestos Mfg. Co.
 Valley Forge—See American Asbestos Co.
 Viking—See Zinke Co.
 Vogt—See Zinke Co.
 Wales—See American Brake-Lining Co.
 Wearwell Gasket & Packing Co., Camden, N. J. "Longwear."
 White Stripes—See Advance Automobile Accessories Corp.
 Wirebestos—See Durwyllan Co.
 Woven Steel Hose & Rubber Co., Dale St., Trenton, N. J.
 Wright Motor Specialties Co., 1326 Michigan Ave., Chicago, Ill.
 Zebra—See McElroy Belting & Hose Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Vogt Mfg. Corp., Rochester, N. Y. "Viking.") (See page 774.)

LINING CUTTERS—See Cutters, Brake Lining**LINING, Fabric Radiator**

Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., Middletown, Conn. "Rusco." (See page 530.)

LINING, FRAME—See Lining, Body or Frame**LINING, RADIATOR—See Lining, Fabric Radiator****LINING, TRANSMISSION BAND FOR FORDS—See Lining, Brake****LINKS, STEERING—See Connections, Steering****LINKS, Steering, for Fords**

Balcrank—See Cincinnati Ball Crank Co.
 Cincinnati Ball Crank Co., Cincinnati, O. "Balcrank." (See page 498.)

LINKS, Tire Chain Repair

American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Klinch-Linx."
 Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn.
 Klinch-Linx—See American Auto Products Co.
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Are you getting your share
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Buffalo, N. Y...730 Main St. Burton-Rogers Co.
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Cleveland, Ohio.5200 Euclid Ave. Burton-Rogers Co.
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Elmira, N. Y...424 E. Market
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ing & Supply Co.
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FIBRE SHEET PACKING
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FABRIC FAN BELTS
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CLUTCH FACINGS
Any Size

RADIATOR HOSE
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ABC

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American Linoleum Mfg. Co., 266 Fifth Ave., New York, N. Y. "Wild's."
 Armstrong Cork Co., 124 23d St., Pittsburgh, Pa.
 Blabon Co., Geo. W., 21st St. & Hunting Park Ave., Philadelphia, Pa.
 Cook's Linoleum Co., E. State St., Trenton, N. J.
 Lin-Rhuber—See Sloane, W. & J.
 Monarch Linoleum & Rug Co., Bulletin Bldg., Philadelphia, Pa.
 Nairn Linoleum Co.—See Sloane, W. & J.
 Potter Sons & Co., Thomas, Second St. & Erie Ave., Philadelphia, Pa.
 Ringwalt Linoleum Works, 230 Fifth Ave., New York, N. Y.
 Sloane, W. & J., 571 Fifth Ave., New York, N. Y. (Sole Distributors for Nairn Linoleum Co., Newark, N. J.) "Lin-Rhuber." (See page 535.)
 Wild's—See American Linoleum Mfg. Co.

LINOLEUM CEMENT—See Cement, Linoleum

LIQUID GLUE, AIRPLANE—See Glue, Airplane Liquid

LIQUIDS, PRIMING—See Fluids, Priming

LOAD GOVERNORS—See Meters, Truck Load Indicating

LOAD INDICATING METERS—See Meters, Truck Load Indicating

LOADERS, Grease Gun

Colson, H. H., 3225 Dickens Ave., Chicago, Ill. "Handy."
 Edmund, W. H., 485 E. Preston St., Baltimore, Md.
 Handy—See Colson, H. H.
 Stratlyne Filler Co., 847 University Ave., Berkeley, Cal.

LOADERS, Truck

Haiss Mfg. Co., George, 141st St. & Park Ave., New York, N. Y.
 Lee Trailer & Body Co., 2333 S. La Salle St., Chicago, Ill. (See page 807.)
 Link-Belt Co., Indianapolis, Ind. (See page 233.)
 Revolver Co., Jersey City, N. J.

LOCK NUTS—See Nuts, Lock

LOCK SWITCHES—See Switches, Lock

LOCK SWITCHES FOR FORDS—See Locks, Switch and Coil

LOCK VALVES—See Valves, Gasoline Lock

LOCK WASHERS—See Nuts and Washers, Lock

LOCKERS, Metal Clothes

All-Steel-Equip Co., 150 John St., Aurora, Ill.
 Berger Mfg. Co., 1833 Belden Ave., N. E., Canton, O. "Berloy."

Bergmann Mfg. Co., 152 N. Eleventh St., Philadelphia Pa. "Columbia."

Berloy—See Berger Mfg. Co.

Buffalo Wire Works Co., 431 Terrace, Buffalo, N. Y.

Columbia—See Bergmann Mfg. Co.

Darby & Sons Co., Edward, 413 N. 18th St., Philadelphia, Pa. "Pen-Dar."

Dexter Metal Mfg. Co., Front & Arch Sts., Camden, N. J.

Dunham Co., Thos., Aurora, Ill. "Equipto." (See page 145.)

Durand Steel Locker Co., 1599 Ft. Dearborn Bank Bldg., Chicago, Ill. (See page 679.)

Equipto—See Dunham Co.

Federal Steel Fixture Co., 4545 W. Homer St., Chicago, Ill.

Hart & Hutchinson Co., New Britain, Conn.

Hettis Co., Dime Bank Bldg., Detroit, Mich.

Jefferis Co., R. W., 11th & Linden Sts., Camden, N. J.

Lyon Metallic Mfg. Co., (Montgomery) Aurora, Ill.

Manufacturing, Equipment & Engineering Co., Framingham, Mass. "Mecco."

Mecco—See Manufacturing, Equipment & Engineering Co.

Medart Mfg. Co., Fred, Potomac & De Kalb Sts., St. Louis, Mo.

New York Machinery Co., 200 Fifth Ave., New York, N. Y.

Pen-Dar—See Darby & Sons Co.

Shults & Co., H. H., 24 Commercial St., Genoa, N. Y.

Terrell's Equipment Co., Hall & Hilton Sts., Grand Rapids, Mich.

Van Dorn Iron Works Co., 2685 E. 79th St., Cleveland, O.

LOCKS, Automobile

(To prevent theft of cars; for Lock Switches—See Switches, Lock; for Lock Valves—See Valves, Gasoline; for Car Door Locks—See Locks, Car Door)

A. A. Auto Lock Co., McCormick Bldg., Chicago, Ill.

A. A. C.—See Automotive Appliance Corp.

Able Mfg. Co., 731-33 Folsom St., San Francisco, Cal.

American Lock Mfg. Co., 1434 N. Wells St., Chicago, Ill. (See page 541.)

Auto Alarm Lock Co., 113 Virginia St., Cumberland, Md.

Automat-Co.—See Automotive Material Co.

Automotive Appliance Corp., 144 W. Vermont St., Indianapolis, Ind. "A. A. C."

Automotive Material Co., 451 E. Ohio St., Chicago, Ill. "Automat-Co."

Autolock—See Slaymaker Lock Mfg. Corp.

B & E Lock Co., 3522 Sixth Ave., Des Moines, Iowa. "Evana."

Best Auto Lock Co., 109 Endicott Arcade, St. Paul, Minn.

Bradsto Appliances, 65 Main St., Buffalo, N. Y. "Hager."

Broderick & Bascom Rope Co., 805 N. Main St., St. Louis, Mo. "Powersteel Autolock."

Cairwold Mfg. Co., Third & Huntingdon Sts., Philadelphia, Pa. "Snap-on."

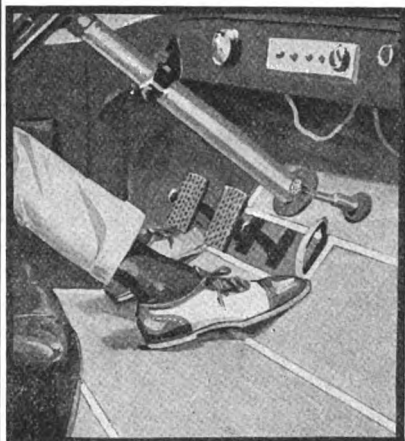
Cammen Laboratories Co., 42 W. 39th St., New York, N. Y. "Carsafe."

Carsafe—See Cammen Laboratories Co.

Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)

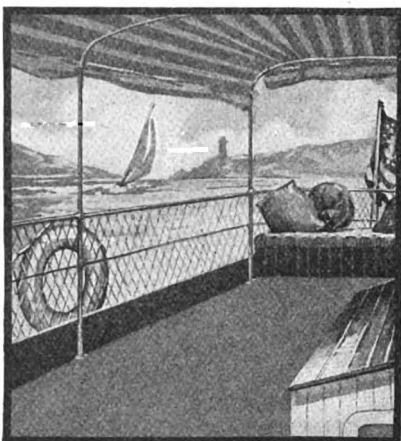
Christie Auto Lock Co., 6607 Dorchester Ave., Chicago, Ill.

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LOCKS, Automobile (Continued)

- Connecticut Telephone & Electric Co., Meriden, Conn. (See page 214.)
- D. & M. Auto Lock Co., 4755 N. Western Ave., Chicago, Ill.
- de Sanno & Son, A. P., 1253 N. Broad St., Philadelphia, Pa. "Defiance."
- Decker Co., Richard M., 2909 Indiana Ave., Chicago, Ill.
- Defiance—See de Sanno & Son.
- Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.
- Electro Depositing & Mfg. Co., 3206 Wash St., St. Louis, Mo.
- Eureka Auto Lock Co., 1134 W. Lake St., Chicago, Ill.
- Evans—See B. & E. Lock Co.
- Ever-Safe Auto Lock Co., 1161 University Ave., St. Paul, Minn.
- Faurot-Scope Corp., 152 W. 42nd St., New York, N. Y.
- F. O. B. Mfg. Co., 520 Arch St., Philadelphia, Pa. "Keystone." (See page 537.)
- Fenton Machine Tool & Die Co., Inc., Fenton, Mich. "Little Dick." (See page 327.)
- Fer-O-Lok—See Ferro Mfg. Co.
- Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Fer-o-Lok." (See page 537.)
- Fort Wayne Auto Specialty Co., Fort Wayne, Ind. "Wayne."
- Gasco Mfg. Co., Lancaster, Pa. "Miller-Gasco."
- General Utility Co., 1335-30 Ogden St., Philadelphia, Pa. "Parker."
- Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 933.)
- Gray Lock Co., 2604 Ninth Ave., Oakland, Cal.
- Green Lock Co., Lightener Bldg., Detroit, Mich.
- H-R Mfg. Co., 1926 S. Wabash Ave., Chicago, Ill. "Neutrallock."
- Hager—See Bradsto Appliances.
- Handee—See Racine Handy Mfg. Co.
- Helsbels, Inc., 127 N. Dearborn St., Chicago, Ill.
- Hershey Mfg. Co.—See Simplex Corp.
- Hillberg Transmission Lock Co., 3620 Island Ave., McKees Rocks, Pa.
- Honeyman Co., W. A., 1361 Seventh Ave., San Francisco, Cal. "K. & H."
- Hugro Mfg. Co., Warsaw, Ind. "Liberty."
- Ideal Lock Co., 608 Chestnut St., Philadelphia, Pa.
- Instant—See Noser Sales Co.
- International Accessories Corp., 65 Main St., Buffalo, N. Y. "Yell-O-Gard."
- Jensen, George C., 253 First St., San Francisco, Cal.
- Johnson Automobile Lock Co., 2309 Archer Ave., Chicago, Ill. (See page 537.)
- K. & H.—See Honeyman Co.
- K. & S. Auto Heater & Lock Co., 2357 S. Michigan Ave., Chicago, Ill. (See page 543.)
- Karlok Mfg. Co., 554 Broad St., Newark, N. J.
- Keeno Keyless Lock Co., 2027 S. Wabash Ave., Chicago, Ill.
- Keystone—See F. O. B. Mfg. Co.
- King Mfg. Co., 3537 S. Broadway, Denver, Colo.
- Leader—See Walker Motor Car Specialties Co.
- Liberty Auto Lock Co., 2016-18 Market St., St. Louis, Mo. (See page 545.)
- Liberty—See Hugro Mfg. Co.
- Little Dick—See Fenton Machine Tool & Die Co., Inc.
- Lucia Mfg. Co., 32 Union Pl., Hartford, Conn.
- Miller-Gasco—See Gasco Mfg. Co.
- Monarch Auto Lock Co., 361 Market St., Kenosha, Wis.
- Motor Car Specialty Co., Tenth & Diamond Sts., Philadelphia, Pa.
- Neutrallock—See H-R Mfg. Co.
- North Side Buick Sales Co., 918-26 Sheridan Rd., Chicago, Ill.
- Noser Sales Co., 2016 Locust St., St. Louis, Mo. "Instant." (See page 545.)
- Nulock Mfg. Corp., 1639 Broadway, New York, N. Y.
- Parker—See General Utility Co.
- Paul Auto Combination Lock Co., 3620 Gratiot Ave., Detroit, Mich. (See page 543.)
- Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill. (See page 545.)
- Powersteel Autolock—See Broderick & Bascom Rope Co.
- Preferred Utilities Co., 1780 Broadway, New York, N. Y. "Wayne."
- Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
- Relco—See Reliance Co.
- Reliance Co., 411-17 S. Sangamon St., Chicago, Ill. "Relco."
- Rochester Safety Lock Co., 530 Main St., Rochester, Ind.
- Rush—See Thomas-Andrews Corp.
- Secret Service—See Worcester Auto Lock Co.
- Security Mfg. Co., 1047 W. 18th St., Los Angeles, Cal.
- Sheppard & Co., J. E., 54 Commercial St., Worcester, Mass.
- Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (Sales Department for Hershey Mfg. Co., Chicago, Ill. "Theft-proof.") (See page 537.)
- Slaymaker Lock Co., 308-70 First St., Lancaster, Pa. "Autolock."
- Smith Caplock Co., 205 W. Harrison St., Chicago, Ill. (See page 547.)
- Snap-On—See Calmold Mfg. Co.
- Starlok Co., 2234 W. 43d St., Chicago, Ill.
- Stewart Mfg. Co., Oakland, Cal. (See page 373.)
- Theftproof—See Simplex Corp.
- Thomas-Andrews Corp., Waukegan, Ill. "Rush."
- Trosien, Charles G., 103 Franklin Blvd., Pontiac, Mich.
- USA—See Universal Safety Appliance Corp.
- Universal Safety Appliance Corp., 414 E. Lexington Ave., Baltimore, Md. "USA."
- Walker Motor Car Specialties Co., 301-03 13th St., Oakland, Cal. "Leader."
- Wayne—See Fort Wayne Auto Specialty Co.
- Wayne—See Preferred Utilities Co.
- Wemscos—See Western Metal Specialty Co.
- Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemscos."
- Worcester Auto Lock Co., 104 Fifth Ave., New York, N. Y. "Secret Service."
- Yell-O-Gard—See International Accessories Corp.

LOCKS, BOX—See Locks, Cabinet**LOCKS, Cabinet and Pad**

- American Lock Mfg. Co., 1424 N. Wells St., Chicago, Ill. (See page 541.)
- B-A-R—See Iowa Lock & Mfg. Co.
- Berkmann Mfg. Co., 625 W. Jackson Blvd., Chicago, Ill. "No-Key."
- Connecticut Lock Co., Fairfield, Conn. "Nopik." (See page 214.)

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A real *thief* proof
lock that fully pro-
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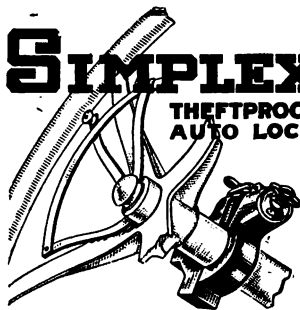
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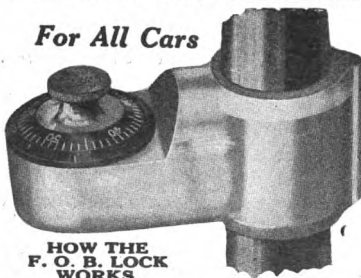
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For All Cars



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The F. O. B. Lock is made of chrome aluminum alloy. Every part is carefully machined to establish tolerance limits under the most rigid inspection and supervision. When attached it becomes an integral part of the steering system, being located a few inches below the steering wheel.

At the outer end is the combination dial, exactly like the dials used on vault doors. When the dial is turned, a direct action locking device causes a steel bolt to engage the steering column, effectually locking the entire steering system in a rigid position.

The lock has a combination as easy to remember as your own telephone number. Turning the dial to the right numbers withdraws the bolt and the steering gear is again free to operate.

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LOCKS, Cabinet and Pad (Cont'd)

Chicago Cabinet Lock Co., 3341 N. Lincoln St., Chicago, Ill. (See page 541.)
 Connecticut Lock Co., Fairfield, Conn. (See page 214.)

Corbin Cabinet Lock Co., New Britain, Conn.
 Eagle Lock Co., 105 Chambers St., New York, N. Y.

Fram-Slaymaker Hardware Co., Park Ave., Lancaster, Pa.

Iowa Lock & Mfg. Co., Tama Bldg., Burlington, Ia. "B-A-R."

Junkunc Bros., 1145 W. Garfield Blvd., Chicago, Ill.

King Lock Co., 319 W. Ohio St., Chicago, Ill.

Miller Lock Co., 4513 Tacony St., Philadelphia, Pa.

No-Key—See Berkmann Mfg. Co.

Nopik—See Connecticut Lock Co.

Sargent & Co., Water & Wallace Sts., New Haven, Conn.

Slaymaker Lock Co., 308-70 First St., Lancaster, Pa.

Yale & Towne Mfg. Co., Stamford, Conn. (See page 540.)

LOCKS, Car Door

American Brass Novelty Co., Grand Haven, Mich.

Auto Brass Mfg. Co., 3514-20 S. Michigan Ave., Chicago, Ill.

American Lock Mfg. Co., 1424 N. Wells St., Chicago, Ill. (See page 541.)

Bremner & Terris Mfg. Co., 137-41 S. Albany Ave., Chicago, Ill. "Christie Miracle."

Chicago Cabinet Lock Co., 3341 N. Lincoln St., Chicago, Ill. (See page 541.)

Christie Miracle—See Bremner & Terris Mfg. Co.

Cowles & Co., C., New Haven, Conn. (See page 451.)

Delphie Specialty Mfg. Co., 435-37 E. Willis Ave., Detroit, Mich.

Douglas & Lomason Co., 5336 Lincoln Ave., Detroit, Mich.

Eberhardt & Son, M., 289 Flushing Ave., Long Island City, N. Y. "M-E."

E. V. B. Mfg. Co., 342 York St., New Haven, Conn.

English & Mersack Co., New Haven, Conn. (See page 539.)

Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 540.)

Hancock Mfg. Co., 303 E. Henry St., Charlotte, Mich.

Invisible Lock Co., Rochester, N. Y.

Keeno Keyless Lock Co., 2037 E. Wabash Ave., Chicago, Ill.

M-E—See Eberhardt & Son.

Mack, Carl, 289 Astoria Ave., Long Island City, N. Y.

Mitchell Specialty Co., 3631 N. Smedley St., Philadelphia, Pa.

National Seal Co., 147 41st St., Bush Terminal, Brooklyn, N. Y.

Ochsner & Sons Co., A., 1060 State St., New Haven, Conn.

Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.

Slaymaker Lock Co., 308-70 First St., Lancaster, Pa.

Smith & Co., Jos. N. 2461-91 E. Grand Blvd., Detroit, Mich.

Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.

Ten Bick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)

Terstedt Mfg. Co., Detroit, Mich. (See Back Cover.)

Variety Mfg. Co., 2958 Carroll Ave., Chicago, Ill.

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

LOCKS, CHAIN—See Locks, Tire Chain

LOCKS, CRANK, FOR FORDS—See Locks, Starting Crank

LOCKS, DEMOUNTABLE RIM—See Bolts, Special Demountable Rim

LOCKS, DOOR—See Locks, Car Door

LOCKS, Emergency Gear Lever for Fords

Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

LOCKS, Manifold, for Fords

Afordalock Co., Rogers Bldg., Council Bluffs, Ia.

LOCKS, NUT—See Nuts, Lock

LOCKS, PAD—See Locks, Cabinet

LOCKS, Pedal, for Fords

(For locking clutch pedal in neutral or brake pedal in on position)

E. T. Auto Lock Co., 1015 Grand Ave., Des Moines, Ia.

Gelner Bros., 1917 Fairmount Ave., Cincinnati, O.

Pedal-Shackle Co., 4620 St. Andrews Pl., Los Angeles, Cal.

Rischmuller Mfg. Co., 3442 19th St., San Francisco, Cal.

LOCKS, Radiator Cap and Thermometer

Anchor-Lox—See Wayne Bumper Co.

B. & B. Accessories Co., 8-10 Pembroke Arcade, Indianapolis, Ind.

Barcy-Nicholson Co., 2301-19 W. Fort St., Detroit, Mich. "Weed."

Bureau of Automotive Equipment, 14 N. Sangamon St., Chicago, Ill.

Hanna Co., W. A., Republic Bldg., Chicago, Ill.

Lee Mfg. Co., 308 Ashley St., Ann Arbor, Mich.

Lock-A-Meter—See White Products Co.

McAdams Sales Co., J. C., 145 W. 63d St., New York, N. Y. "Schlalach." (See page 547.)

Metalware Corp., 228 W. Superior St., Chicago, Ill. "Protex-a-cap." (See page 589.)

Protect-O-Cap—See Up-To-Date Machine Works.

Protex-a-cap—See Metalware Corp.

R. & M. Moto-Meter Lock Co., 514 Brush St., Detroit, Mich.

Rad-A-Lok Co., East Chicago, Ind.

Schlalach—See McAdams Sales Co.

Smith Caplock Co., 205 W. Harrison St., Chicago, Ill. (See page 547.)

Supporter Motormeter Lock Co., 18 E. 55th St., Chicago, Ill.

Up-To-Date Machine Works, 2915 Wabash Ave., Chicago, Ill. "Protect-O-Cap." (See page 735.)

Wayne Bumper Co., Peoples' Trust Bldg., Fort Wayne, Ind. "Anchor-Lox."

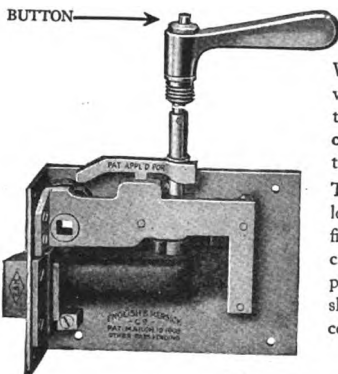
Weed—See Barcy-Nicholson Co.

White Products Co., 18 W. 55th St., Chicago, Ill. "Lock-A-Meter." (See page 543.)

Everything is listed under the NOUN or principal word

ENGLISH & MERSICK,

Rotary Lever Lock



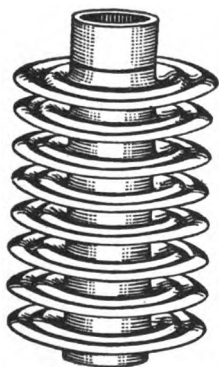
With brand new [inside lock device. To lock the door, just press the button. It unlocks automatically by the regular opening motion of top handle.

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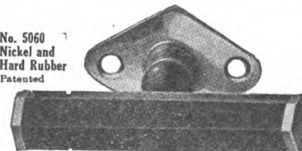
Automobile Body Hardware



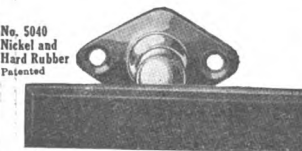
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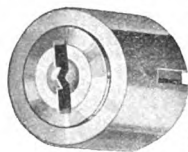
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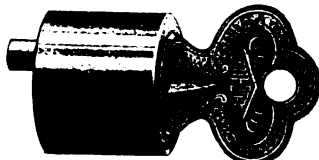
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ALL BRASS PLUG

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LOCKS, Robe

Backus Novelty Co., 707 Water St., Smethport, Pa.
 Handee—See Racine Handy Mfg. Co.
 Kap Mfg. Co., 281 Natoma St., San Francisco, Cal.
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

LOCKS, Spare Tire

Able Mfg. Co., 731-33 Folsom St., San Francisco, Cal.
 American Chain Co., Bridgeport, Conn. (See page 329.)
 Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
 Bantlin Co., Julius J., Cincinnati, O. "Hoover."
 Bellevue Mfg. Co., Bellevue, O. "Buckeye." (See page 169.)
 Boston Leather Specialties, 30 Merrimac St., Boston, Mass.
 Brookins Mfg. Co., Dayton, O.
 Buckeye—See Bellevue Mfg. Co.
 Cleveland Chain & Mfg. Co., Cleveland, O.
 Edstrom Machinery Co., Cary, Ill. "Kant Kink." (See page 733.)
 Esco Mfg. Co., 228 Farnsworth St., Detroit, Mich.
 Fischer & Hayes Rope & Steel Co., 741 Van Buren St., Chicago, Ill.
 Graymie Corp., 323 W. Jackson Blvd., Chicago, Ill.
 Hite Mfg. Co., 833-35 Missionary Ave., Chattanooga, Tenn. "S-O-S."
 Hodes-Zink Mfg. Co., 813 W. State St., Fremont, O. "Sure-Fit."
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Buckeye Locks.) (See page 179.)
 Hoover—See Bantlin Co.
 Hughes-Mellins—See M. & H. Novelty Co.
 Johnson Automobile Lock Co., 2309 Archer Ave., Chicago, Ill. (See page 537.)
 K. & S. Auto Heater & Lock Co., 3357 S. Michigan Ave., Chicago, Ill. (See page 543.)
 Kant Kink—See Edstrom Machinery Co.
 McKinnon Dash Co., Buffalo, N. Y. (See page 686.)
 M & H Novelty Co., 1468 W. 25th St., Los Angeles, Cal. "Hughes-Mellins." (See page 305.)
 Oakes Co., Indianapolis, Ind. (See page 309.)
 Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon Kabulock."
 Romon Kabulock—See Roberts & Monroe.
 S-O-S—See Hite Mfg. Co.
 Sargent & Greenleaf, 1176 Joseph Ave., Rochester, N. Y.
 Security Mfg. Co., 1047 W. 16th St., Los Angeles, Cal.
 Sure-Fit—See Hodes-Zink Mfg. Co.
 Upson-Walton Co., 1310 W. 11th St., Cleveland, O. "U. W." (See page 731.)
 U. W.—See Upson-Walton Co.

LOCKS, Spark and Throttle Lever, for Fords

(For locking spark and throttle levers in fully advanced or retarded position)

Adams, Alden L., 18 Ormond St., Springfield, Mass.
 B. & E. Lock Co., 3522 Sixth Ave., Des Moines, Iowa. "Evans."
 Backus Novelty Co., 707 Water St., Smethport, Pa. "Utility."

Evans—See B. & E. Lock Co.
 Fordloc—See Slaymaker Lock Co.
 Handee—See Racine Handy Mfg. Co.
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Slaymaker Lock Co., 303-70 First St., Lancaster, Pa. "Fordloc."
 Utility—See Backus Novelty Co.

LOCKS, Starting Crank, for Fords

(For locking starting crank in such a position that it can not be engaged or used)

Handee—See Racine Handy Mfg. Co.
 Kranklock—See Oakes Co.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Oakes Co., Indianapolis, Ind. "Kranklock." (See page 369.)
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

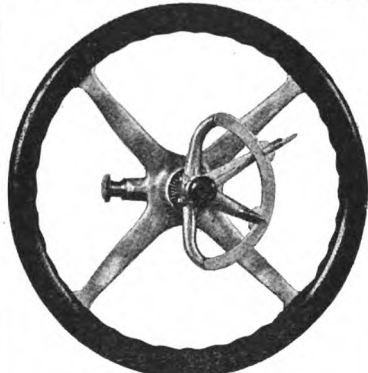
LOCKS, Steering Gear, for Fords

(For locking steering gear or steering wheel in a manner to prevent the turning of front wheels or steering of car)

Allith-Prouty Co., Danville, Ill. "Iron Claw." (See page 703.)
 Asch & Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Spencer Locks.) (See page 247.)
 Au-To Compressor Co., 308 S. Mulberry St., Wilmington, O.
 Auto Safety Device Co., 6 Lombardy St., Newark, N. J. "Bertlock."
 Bauer Mfg. Co., 117 E. 30th St., Chicago, Ill. "Steer-Lock." (See page 545.)
 Bertlock—See Auto Safety Device Co.
 Bull Dog—See Hugro Mfg. Co.
 C. M. & D.—See Chicago Mfg. & Distributing Co.
 Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."
 Decker Co., Richard M., 2909 Indiana Ave., Chicago, Ill.
 Defender Auto-Lock Co., 216-22 Locust St., Allegan, Mich.
 Eureka Auto Lock Co., 1134 W. Lake St., Chicago, Ill.
 Fer-O-Lock—See Ferro Mfg. Co.
 Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Fer-O-Lok." (See page 537.)
 Fox Automotive Products Corp., 4700 N. 18th St., Philadelphia, Pa.
 Gasco Mfg. Co., Lancaster, Pa. "Miller-Gasco."
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 933.)
 H-R Mfg. Co., 1926 S. Wabash Ave., Chicago, Ill. "Wheelock."
 Hart & Co., Randolph, Mass.
 Hershey Mfg. Co.—See Simplex Corp.
 Hugro Mfg. Co., Warsaw, Ind. "Bull Dog."
 Ideal—See Penn Pressed Metal Co.
 Iron Claw—See Allith-Prouty Co.
 Junkunc Bros., 1145 W. Garfield Blvd., Chicago, Ill.
 Keeno Keyless Lock Co., 2037 S. Wabash Ave., Chicago, Ill.
 King Mfg. Co., 3537 S. Broadway, Denver, Colo.
 Lazear Products Co., 557 W. Quincy St., Chicago, Ill.
 Leland Lock Co., Free Press Bldg., Detroit, Mich.
 Long Distance Spark Plug Co., 2616 Second Ave. N., Birmingham, Ala.
 Masters Mfg. Co., 66 Woolsey Sq. (Jamaica Plain), Boston, Mass.

Everything is listed under the NOUN or principal word

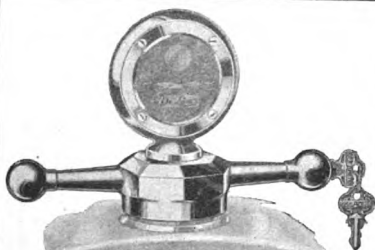
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Approved by the Underwriters WORLD'S SAFEST LOCK

The Paul Lock is made of high class steel parts, carefully machined and hardened. WE GUARANTEE it to outlive the life of any car built. It can be operated at night without light. No keys to forget, or lose. POSITIVELY 100% protection from theft. WE WILL GIVE \$500.00 to anyone opening this lock without knowledge of the combination. We will submit the Paul Lock for inspection to any car manufacturer on their request for Standard Equipment.

DEALERS—Write us for interesting proposition.
Paul Auto Combination Lock Co., Inc.
3620 Gratiot Avenue, Detroit, Mich.



WHITE LOCK-A-METER

De Luxe Model

A Distinctly Quality Product

ABSOLUTE PROTECTION

Without Visible Lock

Locks by Removing the Key.
Built in Three Models for All Cars.
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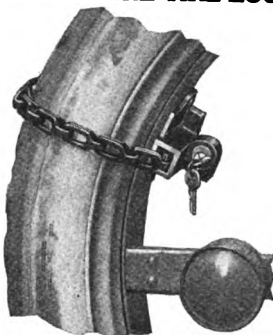


K. & S. Products

Write for catalogue on

AUTO LOCKS

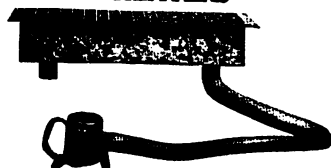
K. & S. SPARE TIRE LOCKS



This spare tire lock is fastened to the tire carrier rim with two rivets as shown in cut. Can be used for single or double tire. It is made of high-grade bronze casting with casehardened chain and locking pin, black enameled. A Yale locking cylinder is used to operate the locking pin. Two sizes, 30-inch chain for tires up to 4 inches and 36-inch chain for tires over 4 inches.

Price, Either Size.....each, \$6.00

K. & S. AUTO EXHAUST HEATERS



The outer box, which contains the heating coil, is made of high-grade galvanized steel to prevent any rusting.

This box is lined with $\frac{1}{8}$ inch thick asbestos. The heating coil is made of a one-piece aluminum casting.

Removable top plate makes it convenient for cleaning out.

It has a universal valve that fits all sizes of exhaust pipes. The valve is operated by a dash control and can be locked in either open or closed position, thereby eliminating all valve noises.

Price, 18x6-inch size.....each, \$30.00

Price, Ford, 12x6-inch size

.....each, 16.00

K. & S. AUTO HEATER & LOCK CO.
3357 So. Michigan Ave., CHICAGO

Please mention The Automobile Trade Directory

LOCKS, Steering Gear, for Fords (Continued)

Miller-Gasco—See Gasco Mfg. Co.
 Moss—See Paul Auto Combination Lock Co.
 Mudd Auto Lock Co., 118-24 S. Clinton St., Chicago, Ill. "Rajo."
 Mueller—See Reliance Co.
 Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich.
 Paul Auto Combination Lock Co., 3620 Gratiot Ave., Detroit, Mich. "Moss."
 (See page 543.)
 Penn Pressed Metal Co., Newton Ave. & Line St., Camden, N. J. "Ideal."
 Permu—See Whittington Mfg. Co.
 Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill. (See page 545.)
 Rajo—See Mudd Auto Lock Co.
 Reliance Co., 411-17 S. Sangamon St., Chicago, Ill. "Safeguard," "Mueller."
 Safeguard—See Reliance Co.
 Security Auto Lock Co., 419 N. Paulina St., Chicago, Ill.
 Simplex Corp., 2214 S. Michigan Ave., Chicago, Ill. (Sales Department for Hershey Mfg. Co., Chicago, Ill. "Theft-proof.") (See page 537.)
 Smith Caplock Co., 205 W. Harrison St., Chicago, Ill. (See page 547.)
 Starlock Co., 2234 W. 43d St., Chicago, Ill.
 Steer-Lock—See Bauer Mfg. Co.
 Spencer Metal Products Co., Spencer, O.
 Swope-McCracken Co., 7720 Gratiot Ave., Detroit, Mich.
 Theftproof—See Simplex Corp.
 Universal Safety Appliance Corp., 414 E. Lexington Ave., Baltimore, Md. "U. S. A."
 U. S. A.—See Universal Safety Appliance Co.
 Wheelock—See H-R Mfg. Co.
 Whittington Mfg. Co., Montrose, Pa. "Permu."

LOCKS, SWITCH—See Switches, Electric Lock

LOCKS, Switch and Coil, for Fords

(Lock for Ignition Switches and Coil Boxes to prevent unauthorized use of car)

Autolock—See K-W Ignition Co.
 Christie Auto Lock Co., 6607 Dorchester Ave., Chicago, Ill.
 Cleveland Accessories Co., 705 St. Clair Ave., N. W., Cleveland, O.
 Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 933.)
 Jitlock—See Metal Specialties Co.
 K-W Ignition Co., 2900 Chester Ave., Cleveland, O. "Autolock."
 Kap Mfg. Co., 381 Natoma St., San Francisco, Cal.
 National Auto Combination Lock Co., E. Tenth St. & 31st Ave., Oakland, Cal. "Davis."
 Davis—See National Auto Combination Lock Co.
 Sandell Switch Lock Co., 190 Pearl St., Hartford, Conn.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 759.)
 Syracuse Universal Mfg. Co., 325-27 W. Fayette St., Syracuse, N. Y.
 Temco Electric Motor Co., 25 Sugar St., Lelpale, O. (See page 877.)

LOCKS, THERMOMETER—See Locks, Radiator Cap and Thermometer

LOCKS, THROTTLE LEVER, FOR FORDS —See Locks, Spark and Throttle Lever

LOCKS, TIRE—See Locks, Spare Tire

LOCKS, Tire Chain

(To prevent the possibility of loss of tire chain through clasp opening up)

Asch & Co., Inc., 10-24 W. 61st St., New York, N. Y. (See page 247.)
 Badger Mfg. Corp., Milwaukee, Wis. "Saf-Lock." (See page 171.)
 Saf-Lock—See Badger Mfg. Corp.
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)

LOCKS, Transmission, for Fords

Everloc—See Wood Co.
 Lowery Lock Co.—See Wright Accessories Corp.
 Motorgrip—See Wright Accessories Corp.
 Wood Co., W. C., Sixth Ave., S. E. & University Ave., Minneapolis, Minn. "Everloc."
 Wright Accessories Corp., Atlanta, Ga. (Sales Department for Lowery Lock Co., Atlanta, Ga. "Motorgrip.")

LOOPS, Brass Snap and Strap

(See also Fittings, Top)

Anchor—See North & Judd Mfg. Co.
 Art Work Shop, 825-36 E. Ferry St., Buffalo, N. Y. (See page 327.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
 Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Auveco."
 Auveco—See Auto Vehicle Parts Co.
 Cowles & Co., C., New Haven, Conn. (See page 451.)
 Desoco—See Detroit Socket Co.
 Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
 Douglas & Lomason Co., 5386 Lincoln Ave., Detroit, Mich.
 Jonah & George, Little's Ct., Merrimac, Mass.
 Nelder Co., F. A., Augusta, Ky.
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Rostand Mfg. Co., Milford, Conn.
 Shepard Art Metal Co., Detroit, Mich. (See page 451.)
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Waterhouse & Freeman Mfg. Co., 319 N. J. R. R. Ave., Newark, N. J.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

LOOSE LEAF BOOKS—See Books, Accounting and Cost System

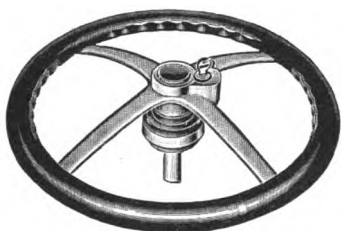
LOOSENERS, TIRE—See Tools, Tire

LOUVRE FORMING MACHINES—See Machines, Louvre Forming

LOW OIL ALARMS—See Alarms, Low Oil

LOW WATER ALARMS—See Columns, Water

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No. 9 DeLux for Ford, Dodge and Chevrolet Cars. Our latest additions in which the height of perfection has been reached.

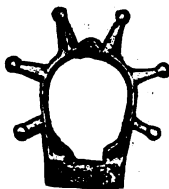
Twelve other styles and sizes of wheels and locks to fit any make of car.

Write for dealers proposition

PERRY AUTO LOCK CO.
2635 Michigan Ave., Chicago, Ill.

LIBERTY AUTO LOCK

"IT LOCKS TO THE SPOKE"



Protects car in owner's absence — the thief cannot steal a car equipped with a Liberty Auto Lock.

Prevents joy riding and unauthorized use.

Cannot be turned or shifted from locked position, even if tire is deflated.

\$200 Reward for the arrest and conviction of anyone stealing or attempting to steal a car with a Liberty Auto Lock properly attached.

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THE LIBERTY AUTO LOCK CO.
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A new locking principle made from case hardened drop forgings, cannot be sawed, filed, chiseled, drilled, or hammered. Installed in five minutes by anyone, anywhere, without change of mechanism. Full aluminum 17-inch TILTING steering wheel, corrugated insert, genuine walnut rim. Makes steering and driving fifty per cent easier. Tilting wheel increases space and adds to driving comfort, giving the utmost freedom on entering or leaving the seat.

Bauer Manufacturing Company
117 East 30th Street, Chicago

"NOSER-INSTANT" AUTO-LOCK

(TRANSMISSION TYPE)

Highest
Test
Class "A"
100% by
National
Board of
Under-
writers

Locks instantly and automatically by pushing down handle, without use of key.

Unlocks instantly by inserting and turning key.

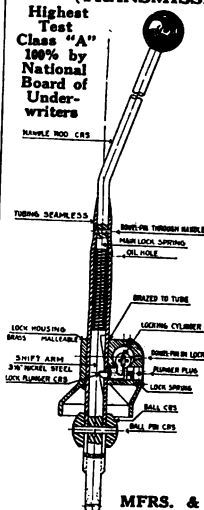
The most perfect and secure Auto-lock ever offered.

Built complete with shifting lever and ball.

Made to fit most all cars.

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Price **\$15.00**
Each

DEALERS: Write for liberal prop. and big discounts



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LOWERING FITTINGS FOR FORDS—See Fittings, Car Lowering

LUBRICANTS, Cutting

Acme—See Swan & Finch Co.
American Oil Corp., S. Water St., Jackson, Mich. "Minlardo."
Ajax—See Phoenix Oil Co.
Cascade—See Swan & Finch Co.
Connecticut Oil Co., 549 S. Leonard St., Waterbury, Conn.
Cut-Rite—See Phoenix Oil Co.
Damasous Mfg. Co., 9501 Cassius Ave., Cleveland, O.
Dearborn Chemical Co., 332 S. Michigan Ave., Chicago, Ill.
Detroit Soluble Oil Co., Beard & M. C. R. R., Detroit, Mich. "Kool-Kut," "Samson."
Drilline—See Krembs & Co.
Economy—See White & Bagley Co.
Emulso—See Sun Co.
Fileline—See Houghton & Co.
Green Oil Soap Co., 166-72 N. Curtis St., Chicago, Ill.
Houghtolard—See Houghton & Co.
Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa. "Fileline," "Houghtolard."
Keep-Kool—See Phoenix Oil Co.
Keystone Oil & Mfg. Co., 111 N. Market St., Chicago, Ill. "Sulpho."
Kool-Kut—See Detroit Soluble Oil Co.
Krembs & Co., 178 N. Green St., Chicago, Ill. "Drilline."
Lardo—See World Oil Products Co.
Lindsay, McMillan Co., 242 Broadway, Milwaukee, Wis. "Mac Lin's."
Lube-Well—See Richards, G. Whitfield.
Mac Lin's—See Lindsay, McMillan Co.
Middle State Oil Co., Engineers Bldg., Cleveland, O. "Perfection."
Minlardo—See American Oil Corp.
Minolard—See White & Bagley Co.
Mystic—See Swan & Finch Co.
Oakite—See Oakley Chemical Co.
Oakley Chemical Co., 23 Thames St., New York, N. Y. "Oakite."
Ohio Refining Co., Laidlaw Ave., Cincinnati, O. "Pep."
Oil City Oil & Grease Co., Seneca St., Oil City, Pa. "Pennzoll."
Panama Lubricants Co., 2624 Santa Fe Ave., Los Angeles, Cal.
Panhard Oil Corp., 395 Broadway, New York, N. Y.
Pennzoll—See Oil City Oil & Grease Co.
Pep—See Ohio Refining Co.
Perfection—See Middle States Oil Co.
Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Ajax," "Cut-Rite," "Keep-Kool."
Rhodes & Co., James H., 518 W. Austin Ave., Chicago, Ill. "Solvane."
Richards, G. Whitfield, 1732 Carlton St., Philadelphia, Pa. "Lube-Well."
Samson—See Detroit Soluble Oil Co.
Solvane—See Rhodes & Co.
Sullivan Oil Co., 413 N. Wells St., Chicago, Ill.
Sulpho—See Keystone Oil & Mfg. Co.
Sun Co., Finance Bldg., Philadelphia, Pa. "Emulso."
Swan & Finch Co., 165 Broadway, New York, N. Y. "Acme," "Mystic," "Cascade."
Waverly Oil Works Co., 54th St. & A. V. R. R., Pittsburgh, Pa.
White & Bagley Co., Worcester, Mass. "Economy," "Minolard." (See page 607.)
World Oil Products Co., 1426 Seneca St., Buffalo, N. Y. "Lardo."

LUBRICANTS, Spring

Alemite—See Bassick Mfg. Co.
Bassick Mfg. Co., 361 W. Superior St., Chicago, Ill. "Alemite." (See page 839.)
Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
ESta-Way-Rust—See Queen City Specialty Co.
E-Z-E—See Hill Co.
Franklin Mfg. Co., 354 Mortimer St., Buffalo, N. Y. "Micalene." (See page 643.)
Graff-O-Products Co., 1071 Parkwood Drive, Cleveland, O.
Halstead Specialties Co., 503 Market St., San Francisco, Cal. "Spring-Eez."
Hill Co., J. Lawrence, 21-29 Plymouth Ave., Rochester, N. Y. "E-Z-E."
Johnson & Son, S. C., 1012 16th St., Racine, Wis.
Kant-Rust Products Corp., 613 St. Georges Ave., Rahway, N. J.
Micalene—See Franklin Mfg. Co.
Moon-Shine Mfg. Co., Kansas City, Mo. "Penetrol." (See page 267.)
Never Rust—See Strater, J. Edward.
Nu Life Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
Penetrol—See Moon-Shine Mfg. Co.
Pierce Products Co., Buffalo, N. Y.
Queen City Specialty Co., Race & Burrows Sts., Cincinnati, O. "ESta-Way-Rust."
Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y.
Rie-Nie—See Durkee-Atwood Co.
Spring-Eez—See Halstead Specialties Co.
Strater, J. Edward, 3060 Euclid Ave., Cleveland, O. "Never Rust."
Thomson Auto Specialties Co., 80-90 W. Spring St., Columbus, O.

LUBRICATING GRAPHITE—See Graphite, Lubricating

LUBRICATING GREASE—See Cups, Oil and Grease.

LUBRICATING OILS—See Oils, Lubricating; also Cups, Oil and Grease

LUBRICATING SPRING STRIPS—See Strips, Spring Leaf Lubricating

LUBRICATING SYSTEMS—See Systems, Chassis Lubricating

LUBRICATOR BELTS—See Belts, Endless Fabric; also Belts, Spiral Wire

LUBRICATOR WICKING—See Wicking, Felt Lubricator

LUBRICATORS, BOLT—See Lubricators, Spring and Shackle Bolt

LUBRICATORS, CHASSIS—See Systems, Chassis Lubricating

LUBRICATORS, Cup Cylinder

(For feeding Graphite to cylinders)

Ohio Buff & Mfg. Co., 1924-26 W. Eighth St., Cincinnati, O.

Woolf Graphite Lubricator Co., 3024 Ames Ave., Omaha, Neb.

LUBRICATORS, FORCE FEED—See Lubricators, Tractor Force Feed.

LUBRICATORS, HAND—See Lubricators or Oil Pumps, Hand

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PREVENTS THEFT OF MOTOMETER AND CAP

It absolutely prevents their theft or removal without the key. This ingenious device locks the cap so that it positively cannot be taken off.



The SMITH CAPLOCK is so simple that it can be installed in from 5 to 10 minutes on any car using a SCREWED-ON or SCREWED-IN radiator cap.

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SMITH CAPLOCK COMPANY

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205 W. HARRISON ST.

ILLINOIS

**Smith Caplock
Complete**



Actual Size

List Price, each.....\$2.00
Dealers—Less than 10—25% discount
10 or more.....33 1/3% discount

AMERICAN COMBINATION AUTOMOBILE LOCK

LOCKS IGNITION 100% PERFECT



Sell the lock that offers the "Greatest Protection on Earth." Attached to instrument board, the nickel-plated front plate and combination dial are the only parts visible. Removal of center screw enables owner to change combination at will, insuring absolute protection from theft.

**One Complete Turn of the Dial Locks Your Car—
One and a Half Seconds to Unlock**

The illustration below shows complete lock assembly, including lock, tempered steel conduit and steel cover protecting coil terminals. Retail price, \$24.50. Liberal discount to dealers—write us for details.



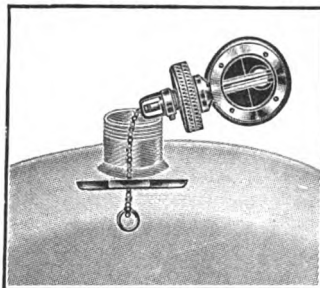
Can be installed on any car having battery or low tension ignition.

**American Devices National Sales
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Consumers Bldg., 228 S. State St., Chicago

The Schlaich Lock

FOR BOYCE MOTO METERS



A positive protection against breakage as well as theft. Can be installed by a child. No keys to bother with when filling radiator. Made in four sizes.

No. 1, for "De Luxe" and Truck and "Tractor" Models.....\$2.00
No. 2, for "Standard" and "Universal"..... 1.50
No. 3, for "Junior" and "Ford"..... 1.50
No. 4, for "All Overland Types"..... 1.50

ATTRACTIVE DISCOUNT TO DEALERS

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Indorsed and used as regular equipment on DE LUXE MODEL MOTO METERS by The Moto Meter Company, Inc.

The J. C. McAdams Sales Company

145 West 63rd Street New York, N. Y.

Storage Battery Terminals

HIGH-GRADE CAST BRASS LEAD COATED

*Write for Complete Price List
and Discounts*

MEIKLE MFG. COMPANY, Springfield, Illinois

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LUBRICATORS, MECHANICAL—See Lubricators or Oil Pumps, Mechanical

LUBRICATORS, OIL AND GREASE CUP—
See Cups, Oil and Grease

LUBRICATORS, Pressure

(Operated by exhaust pressure)

Pedersen Lubricator Co., 686 First Ave., New York, N. Y.

W. H. Oil Saving Co., Lewiston, Idaho.

Wilkinson Co., Wm H., Main St., West Medway, Mass.

LUBRICATORS, SHACKLE BOLT—See Lubricators, Spring and Shackle Bolt

LUBRICATORS, SPRING LEAF—See Cups, Spring Leaf; also Strips, Spring Leaf Lubricating

LUBRICATORS, Spring and Shackle Bolt

(See Cups, Oil and Grease; also Bolts, Spring and Shackle)

Meckel Lubricator Co., 1567 Grace Ave. (Lakewood), Cleveland, O.

LUBRICATORS, Tractor Force Feed

American Injector Co., 1469 14th Ave., Detroit, Mich. "Explo," "Surefeed."

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "McCord" Lubricators.) (See page 113.)

Explo—See American Injector Co.

McCord Mfg. Co., Detroit, Mich. (See page 400.)

Madison-Kipp Co., 2227 Waubesa St., Madison, Wis.

Manzel Bros. Co., 309 Beard Ave., Buffalo, N. Y.

Surefeed—See American Injector Co.

LUBRICATORS or OIL PUMPS, Hand

(Auxiliary Hand Oil Pumps)

Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

LUBRICATORS or OIL PUMPS, Mechanical

(Engine Driven Oil Pumps)

Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.

Detroit Lubricator Co., 5842-5986 Trumbull Ave., Detroit, Mich.

Hancock Mfg. Co., 770 Henry St., Charlotte, Mich.

Higgins Machine Works, 25 Keystone St., Buffalo, N. Y. "Osgoods."

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

Mystio—See Cataract Refining & Mfg. Co.

Oilomatik—See Auto Products Mfg. Co.

Osgoods—See Higgins Machine Works.

Pedersen Lubricator Co., 686 First Ave., New York, N. Y.

Richardson-Phoenix Co., 122-28 Reservoir Ave., Milwaukee, Wis.

Schirmer Co., Guardian Bldg., Cleveland, O. "Viking."

Viking—See Schirmer Co.

LUBRICATORS and OIL PUMPS, for Fords

(Supplementary oiling devices)

Adamson Mfg. Co., East Palestine, O.

Auto Accessories Mfg. Co., 509 Mulberry St., Des Moines, Iowa. Strong.

Auto Products Mfg. Co., 341-49 E. Ohio St., Chicago, Ill. "Oilomatik."

Brown Co., 1071-73 Clinton St., Syracuse, N. Y.

Consolidated Mfg. Co., 1440 Broadway, Oakland, Cal. "Wilmo."

Craig-Hunt—See Speedway Engineering Co.

Forgeair Pump Co., 523 Hobart St., Oakland, Cal.

Fracto, Inc., 161 Massachusetts Ave., Boston, Mass.

Johnston Mfg. Co., William R., 451-469 E. Ohio St., Chicago, Ill. (See page 437.)

Junior—See Pedersen Lubricator Co.

Kittle Mfg. Co., 641 Santa Fe Ave., Los Angeles, Cal. (See page 463.)

Pedersen Lubricator Co., 686 First Ave., New York, N. Y. "Junior."

S. O. S.—See Safety Oiling System, Inc.

Safety Oiling System, Inc., 2203 Fairmount Ave., Philadelphia, Pa. "S. O. S."

Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt." (See page 381.)

Standex, Inc., 341 E. Ohio St., Chicago, Ill.

Strong—See Auto Accessories Mfg. Co.

Wilmo—See Consolidated Mfg. Co.

Yale Corp., I. W. Hellman Bldg., Los Angeles, Cal.

LUGGAGE BAGS FOR FORDS—See Bags, Luggage

LUGGAGE CARRIERS—See Holders, Suit Case; also Racks, Trunk; also Trunks

LUGGAGE CASES FOR FORDS—See Bags, Luggage

LUGGAGE HOLDERS—See Holders, Suit case or Luggage

LUGS, Tire

Andrews Heating Co., 2529 University Ave., S. E., Minneapolis, Minn.

LUGS, Tractor Detachable

Bentz—See Schell, Walter S.

Loxon—See Universal Lug Co.

Schell, Walter S., 1307-09 Market St., Harrisburg, Pa. "Bentz."

Universal Lug Co., 1401 S. 55th Ct., Chicago, Ill. "Loxon."

Warren Steel Castings Co., 3400 Maury Ave., St. Louis, Mo.

Everything is listed under the NOUN or principal word

LUMBER, Automobile

Abeles & Tausig Tie Corp., Commercial Bldg., St. Louis, Mo.
 Agasote—See Pantasote Co.
 American Colum & Lumber Co., St. Albans, W. Va.
 Anderson-Tully Co., Memphis, Tenn.
 Arkla Lumber & Mfg. Co., 881 E. Seventh St., Brooklyn, N. Y.
 Baker-Matthews Lumber Co., Bank of Commerce Bldg., Memphis, Tenn.
 Bramble, A. D., Palmer, Mass.
 Brown & Co., George C., Bank of Commerce Bldg., Memphis, Tenn.
 Buffalo Hardwood Lumber Co., 940 Seneca St., Buffalo, N. Y.
 Carrier Lumber Co., Brevard, N. C.
 Carrier Lumber & Mfg. Co., Sardis, Miss.
 Chickasaw Lumber Co., Demopolis, Ala.
 Coppes Bros. & Zoak, Nappanee, Ind.
 Darling Lumber Co., J. W., Cincinnati, O.
 Evans Lumber Co., G. H., Chattanooga, Tenn.
 Haskelite Mfg. Corp., 133 W. Washington St., Chicago, Ill.
 Himmelberger-Harrison Lumber Co., Cape Girardeau, Mo.
 Hoffman Bros. Co., 800 W. Main St., Fort Wayne, Ind.
 Korn Co., Gwynne Bldg., Cincinnati, O.
 Lake Independences Lumber Co., 623 S. Wabash Ave., Chicago, Ill.
 Lamb-Fish Lumber Co., Charleston, Miss.
 Leonard, H. R., Seaboard Bank Bldg., Norfolk, Va.
 Love, Boyd & Co., ft. S. Second St., Nashville, Tenn.
 Luehrmann Hardwood Lumber Co., Chas. F., 143 Carroll St., St. Louis, Mo.
 Martin-Barrias Co., 2048 W. Third St., Cleveland, O.
 Moore & McFerrer, 865 N. Front St., Memphis, Tenn.
 Multnomah Lumber & Box Co., Bancroft St., Portland, Ore.
 Mundhenk-Curtiss Lumber & Fuel Co., 27 W. Van Buren St., Chicago, Ill.
 Murrelle Lumber Co., L. D., Exchange Bldg., Memphis, Tenn.
 North Vernon Lumber Mills, North Vernon, Ind.
 Paepcke Leicht Lumber Co., 111 W. Washington St., Chicago, Ill.
 Pantasote Co., 11 Broadway, New York, N. Y. "Vehisote," "Agasote."
 Peitch Co., F. T., 808 Superior Ave., W., Cleveland, O.
 Shafer, Cyrus C., Citizens National Bank Bldg., South Bend, Ind.
 Sheip & Vandergrift, 818-22 N. Lawrence St., Philadelphia, Pa.
 Shiels & Co., Charles F., McLean Ave. & Gest St. Cincinnati, O.
 Sullivan & Co., T., 2 Arthur St., Buffalo, N. Y.
 Three States Lumber Co., Memphis, Tenn.
 Thompson-Katz Lumber Co., 3 S. Main St., Memphis, Tenn. "Tomkats."
 Tomkats—See Thompson-Katz Lumber Co.
 Vehisote—See Pantasote Co.
 West Virginia Timber Co., Orange, Va.
 Young Lumber Co., 19 Edwards St., Binghamton, N. Y.

LUMINOUS COMPOUNDS—See Paints, Lumines**LUNCH BOXES—See Hampers, Touring****LUNCH TABLES—See Tables, Picnic and Lunch****LUNCHEON CASES—See Hampers, Touring****MACHINE BOLTS—See Bolts, Machine****MACHINE KEYS—See Keys, Machine****MACHINE SCREW TAPS—See Taps and Dies****MACHINE SCREWS—See Screws, Machine****MACHINE WORK TO ORDER**(See also *Screw Machine Products*)

Acme Electric & Mfg. Co., 1444 Hamilton Ave., Cleveland, O.
 Acme Mfg. Works, 660 Turk St., San Francisco, Cal.
 Adapt Machinery Co., 1624-32 S. Wabash Ave., Chicago, Ill.
 Advance Machine Co., 2700 Franklin St., Detroit, Mich.
 Aetna Brass & Bronze Co., 1631-35 E. 35th St., Cleveland, O.
 Akins Machine Co., Wm. C., 1 Gleason Pl., Rochester, N. Y.
 Albany Machine & Tool Co., 1031 Broadway, Albany, N. Y.
 Alent Machine Tool Co., Rochester, N. Y.
 Alexander & Cox Co., 2358 Ogden Ave., Chicago, Ill.
 Allen-Fleming Machine Works, 174-76 Ellicott St., Buffalo, N. Y.
 American Brass Products Co., Pottstown, Pa.
 American Brass & Iron Co., Detroit, Mich. (See page 203.)
 American Die & Tool Co., Reading, Pa. (See page 420.)
 American Forge & Machine Co., 1050 Barth Ave., Canton, O. (See page 385.)
 American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich. (See page 913.)
 American Metal Products Co., 671 Kinnlekinnie Ave., Milwaukee, Wis.
 American Tool & Garage Co., 2056 E. Fourth St., Cleveland, O.
 American Tool & Machine Co., 10 High St., Boston, Mass.
 American Tool, Die & Machine Co., 1114-30 E. Tenth St., Indianapolis, Ind.
 Anderson, H. S., 211-19 N. Sheridan Ave., Pittsburgh, Pa.
 Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.
 Armstrong Machine & Tool Co., 1001 S. Washington St., Peoria, Ill.
 Arrow Motor & Machine Co., 729-39 Freylinghuysen Ave., Newark, N. J.
 Arrow Tool & Mfg. Co., 220 Cannon St., Bridgeport, Conn.
 Ashley Machine Works, 724 University Ave., Rochester, N. Y.
 Atlas Brass Foundry Co., Columbus, O. (See page 551.)
 Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
 Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.
 Auto Engineering Co., 1535 Temple Ave., Detroit, Mich. (See page 85.)
 Auto Parts Mfg. Co., 1815 Trombly Ave., Detroit, Mich.
 Babson-Dow Mfg. Co., 60 Fulda St. (Roxbury), Boston, Mass.
 Ball Gear & Machine Co., 56-58 Greenpoint Ave., Brooklyn, N. Y.

Everything is listed under the NOUN or principal word

MACHINE WORK TO ORDER (Continued)

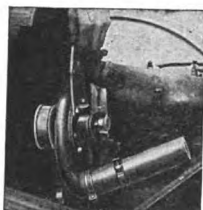
- Baum's Metal Specialties Co., 1023 Wyandotte St., Kansas City, Mo.
- Baush Machine Tool Co., 156 Wason Ave., Springfield, Mass.
- Bayne Mfg. Co., Bushnell, Ill.
(See page 149.)
- Bay State Machine & Tool Co., 30 Cypress St., Springfield, Mass.
- Bay View Foundry Co., McDonough, Water & Shelby Sts., Sandusky, O.
- Beaver Machine & Tool Co., 625-43 N. Third St., Newark, N. J.
- Bender & Sons, Ph. J., 37 Frankfort St., New York, N. Y.
- Benton Harbor Engineering Works, Benton Harbor, Mich.
- Berggren & Pearson Machine Co., 211-27 Canal St., New York, N. Y.
- Bersted Forming Tool Co., 765-71 Mather St., Chicago, Ill.
- Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
- Bilton Machine Tool Co., Bridgeport, Conn.
(See page 559.)
- Birch & Birch, 1001-03 E. College St., Crawfordsville, Ind.
- Blair Tool & Machine Works, 521 Greenwich St., New York, N. Y.
- Blake & Johnson Co., Waterbury, Conn.
(See page 737.)
- Blanchard Machine Co., 64 State St., Cambridge, Mass.
- Blass Automotive Engineering Co., Ralph, 975-85 Geary St., San Francisco, Cal.
- Blattner Co., Geo. H., 1401-05 Jackson Blvd., Chicago, Ill.
- Blickman, S., Nelson Ave. & Mount St., Long Island City, N. Y.
- Blum & Co., Wm., 718 S. 18th St., Newark, N. J.
- Boeger-Meyer Machine & Tool Co., 59 Whorter St., Newark, N. J.
- Bond Machine Co., 315-25 W. Fifth St., Wilmington, Del.
- Bonney Forge & Tool Works, Allentown, Pa.
- Boston Tool & Mfg. Co., 263 Dover St., Boston, Mass.
- Bourke Machine Co., 1450 21st St., Detroit, Mich.
- Brady Tool & Die Corp., 236 Mill St., Rochester, N. Y.
- Bradley Motor Co., 163 Highland Ave., Newark, N. J.
- Brass Foundry Co., 711-17 S. Adams St., Peoria, Ill.
- Bremer Co., O. B., 222 Division St., Burlington, Ia.
- Bremer & Co., 139 N. Seventh St., Philadelphia, Pa.
- Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.
- Bridgeport Die & Machine Co., 170 Elm St., Bridgeport, Conn.
- Bridgeport Engineering Co., Seymour & Stratford Sts., Bridgeport, Conn.
- Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.
- Bristol Industries, Inc., Woolworth Bldg., New York, N. Y.
- Broadway Tool & Machine Co., 717 Livingston St., Elizabeth, N. J.
- Brook, Jr., Tool & Mfg. Works, Arthur, 533 N. 11th St., Philadelphia, Pa.
- Brooks Machine Co., York, Pa.
- Bucher-Smith Co., East Liverpool, O.
- Buckeye Welding & Repair Shop, 133 Water St., Lima, O.
- Buerk Tool Works, 33 Pearl St., Buffalo, N. Y.
- Buffalo Cylinder Grinding Co., 339 Main St., Buffalo, N. Y.
- Bultman Co., F. H., 10271 Berea Rd., Cleveland, O.
- Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O.
(See page 175.)
- Burgess Machine Co., 45 Chestnut St., New Haven, Conn.
- C. H. P. Machine Co., 107 W. 56th St., New York, N. Y.
(See page 735.)
- Carpenter Mfg. Co., E. W., 1565 Railroad Ave., Bridgeport, Conn.
- Catelain, Andre, 1446-48 Indiana Ave., Chicago, Ill.
- Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
- Central Machine Co., 715 Brush St., Detroit, Mich.
- Central Machine Works, 19 Church St., Worcester, Mass.
- Central Service Corp., 1907 Merchants Bank Bldg., Indianapolis, Ind.
(Sales Representatives.)
(See page 945.)
- Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill.
- Chester Die Sinking & Machine Co., Chester, Pa.
- Chicago Metal Products Co., 501 S. Jefferson St., Chicago, Ill.
- City Auto Repair Co., 36 Chapel St., Hartford, Conn.
- City Engineering Co., Beaver Power Bldg., Dayton, O.
- Clark Engine & Boiler Co., Ransom & Clark Sts., Kalamazoo, Mich.
- Clark-Sinclair Machine Works, 731 Turk St., San Francisco, Cal.
- Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.
- Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.
- Cochran Piston Corp., Moffatt Bldg., Detroit, Mich.
- Cogswell Mfg. Co., 35 Hall St., Springfield, Mass.
- Cohoes Iron Foundry & Machine Co., 37 Van Rensselaer St., Cohoes, N. Y.
- Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.
- Collamer Machine Works, 1314 E. 152d St., Cleveland, O.
- Columbus Auto Parts Co., 215 E. Russel St., Columbus, O.
- Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.
- Connelly Machine & Tool Co., 56 Harrison Ave., Springfield, Mass.
- Cotton, H. W., Woolworth Bldg., New York, N. Y.
- Craddock, Edward S., 221 E. 144th St., New York, N. Y.
- Crittenden Mfg. Co., 3330 Washington St., Boston, Mass.
- Currie & Son, J. B., 72 Adams St., Brooklyn, N. Y.
- Cygnat Mfg. Co., 41 Perry St., Buffalo, N. Y.
- Damon & Glenn, 189 High St., Boston, Mass.
- Davis Machine Co., C. F., 133 Andrews St., Rochester, N. Y.
- Day, Geo., 21 Haverhill St., Boston, Mass.
- De Camp & Sloan, 173 Pennington St., Newark, N. J.
- Detroit Accessories Corp., Detroit, Mich.
(See page 669.)
- Detroit Gear & Machine Co., 670 E. Woodbridge St., Detroit, Mich.
- Detroit Machine Tool Co., 6545 St. Antoine St., Detroit, Mich.
- Detroit Motor Castings Co., 299-303 Beaufait Ave., Detroit, Mich.
- Detroit Motor Parts Co., 132-35 W. Larned St., Detroit, Mich.

Everything is listed under the NOUN or principal word

THE ATLAS BRASS FOUNDRY CO.

Quantity & Quality Production in Machine Work

BRASS, BRONZE & ALUMINUM CASTINGS
BEARING BRONZES
AUTOMATIC SCREW MACHINE PRODUCTS



ATLAS Special Circulating Pump for Fords

The fact that 90% of all high grade cars are equipped with circulating pumps is proof that this is an ideal system of cooling cars.

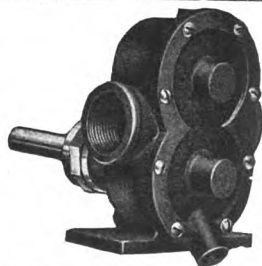
We have designed a special circulating pump for Ford Cars that greatly increases their cooling efficiency.

If you are a dealer or jobber, we have an interesting proposition to offer you.

ATLAS Standardized Bronze Geared Circulating Pump

These pumps are designed for Automobiles, Trucks, Tractors, Aircrafts and Motor Boats. If you manufacture any of these vehicles, we will gladly submit best prices in quantities.

We also manufacture Centrifugal Water Pumps for automobiles in large quantities. We are also in a position to design and build pumps to suit any requirements. Literature describing the above products will be mailed upon request.



FOLLOWING SIZES OF ATLAS CORED BARS CARRIED IN STOCK												
Outside Diameter	CORE SIZES											
	(Inside Diameter)											
1"	3/4"	1/2"	3/8"	1/4"	3/16"	1/8"	1/16"	3/32"	1/32"	1/64"	1/128"	1/256"
1 1/4"	1 1/8"	1 1/4"	1 1/8"	1 1/4"	1 1/8"	1 1/4"	1 1/8"	1 1/4"	1 1/8"	1 1/4"	1 1/8"	1 1/4"
1 1/2"	1 1/4"	1 1/2"	1 1/4"	1 1/2"	1 1/4"	1 1/2"	1 1/4"	1 1/2"	1 1/4"	1 1/2"	1 1/4"	1 1/2"
1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1 3/4"
2"	1 7/8"	2"	1 7/8"	2"	1 7/8"	2"	1 7/8"	2"	1 7/8"	2"	1 7/8"	2"
2 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"	2 1/4"
2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
2 3/4"	2 3/4"	2 3/4"	2 3/4"	2 3/4"	2 3/4"	2 3/4"	2 3/4"	2 3/4"	2 3/4"	2 3/4"	2 3/4"	2 3/4"
3"	2 7/8"	3"	2 7/8"	3"	2 7/8"	3"	2 7/8"	3"	2 7/8"	3"	2 7/8"	3"
3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"	3 1/4"
3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"	3 1/2"
3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"	3 3/4"
4"	3 7/8"	4"	3 7/8"	4"	3 7/8"	4"	3 7/8"	4"	3 7/8"	4"	3 7/8"	4"

All Bronze used is composed of 80% copper 10% tin and 10% lead

COLUMBUS, OHIO, U.S.A.

Please mention The Automobile Trade Directory

MACHINE WORK TO ORDER (Continued)

- Detroit Reliable Machine Co., 676 W. Grand Blvd., Detroit, Mich.
- Diamond Stamping Works Co., 5400 Windsor Ave., Cleveland, O.
- Diamant Tool & Mfg. Co., 91-97 Runyon St., Newark, N. J.
- Dice Machine Co., 16th & Jackson Sts., Anderson, Ind.
- Diebold Products Co., 5313-37 St. Clair Ave., Cleveland, O.
- Dimler-Hines Tool Co., Third & Canal Sts., Dayton, O.
- Diuguid Bros., 975 Atlantic Ave., Brooklyn, N. Y.
- Divine, J. Morgan, Lock Sheldrake, N. Y.
- Dodge Mfg. Co., S. Union St., Mishawaka, Ind.
- Dodge Tool Co., 721 Main St., Grinnell, Ia.
- Dominick & Co., Wm., 2220 Indiana Ave., Chicago, Ill.
- Dorchester Machine & Tool Works, 70 Freeport St. (Dorchester), Boston, Mass.
- Dover, George W., 1012 Eddy St., Providence, R. I.
- Driver-Harris Co., Harrison, N. J.
- Du Bois Machine Shop, 113-23 Hudson Ave., Albany, N. Y.
- Dunham Co., Thos., Aurora, Ill.
(See page 145.)
- Dunkirk Machine & Boiler Co., Dunkirk, N. Y.
- Dunner Machine Co., 220 Center St., New York, N. Y.
- Eagle Engineering Co., W. Main St. & Bell Ave., Springfield, O.
- Eagle Machine Co., 20 N. Noble St., Indianapolis, Ind.
- East Moline Engineering & Mfg. Co., East Moline, Ill.
- Eastern Production Co., 136 Leib St., Detroit, Mich.
- Easton Machine Co., Central St., So. Easton, Mass.
- Ellipse Machine Co., Elmira, N. Y.
(See page 439.)
- Elite Machine & Tool Works, 220 W. 19th St., New York, N. Y.
- Ellicott Machine Co., 160 Ellicott St., Buffalo, N. Y.
- Elliot Mfg. Co., J. H., Madison & Main Sts., Bridgeport, Conn.
- Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.
- Emerson Mfg. Co., 3529 Gratiot Ave., Detroit, Mich.
- Emerson Pump & Valve Co., Alexandria, Va.
- Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
- Enterprise Machine & Tool Co., 903 E. 135th St., New York, N. Y.
- Eppembach, Wm., 281 Vernon Ave., Long Island City, N. Y.
- Eureka Tool & Machine Co., 42 Walnut St., Newark, N. J.
- Exeter Brass Works, 10 R. R. Ave., Exeter, N. H.
- F-S Machine Specialties, 171 Washington St., Newark, N. J.
- Federal Machine Products Co., 6442 Farnsworth St., Detroit, Mich.
- Feeney Tool Co., 751 Central Ave., Bridgeport, Conn.
- Fenton Machine Tool & Die Co., Inc., Fenton, Mich. (See page 327.)
- Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.
- Fiber Barrel Machinery & Mfg. Co., 2516 Jane St., Pittsburgh, Pa.
- Fisher Machine & Tool Co., 103 Broadway, Buffalo, N. Y.
- Flagg & Co., Stanley G., Morris Bldg., Philadelphia, Pa.
- Folts Mfg. & Supply Co., Hagerstown, Md.
- Ford Mfg. Co., M. J., 307-11 Newark St., Hoboken, N. J.
- Fore River Shipbuilding Corp., Quincy, Mass.
- France Foundry & Machine Co., (N. Baltimore), Baltimore, O.
- Franklin Machine & Tool Co., Springfield, Mass. (See page 509.)
- Frostholm Bros., 221 Washington Sq., Syracuse, N. Y.
- Fuller & Sons Mfg. Co., Kalamazoo, Mich.
- G-H-P Mfg. Co., 128 N. Main St., Providence, R. I.
- Geer Machine Works, Wm. E., 112 Summit Lane (East Liverpool), Liverpool, O.
- G. & G. Mfg. Co., 2126 Howard St., Detroit, Mich.
- Garrison Machine Works, 26 S. St. Clair St., Dayton, O.
- Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
- Geter Co., P. A., 540 E. 105th St., Cleveland, O. (See page 661.)
- General Machine Co., 227 Eddy St., Providence, R. I.
- General Machine Works, Lamour & Prospect Sts., York, Pa.
- General Mfg. Co., 255 Meldrum Ave., Detroit, Mich.
- General Tool & Engineering Co., 2496 E. Grand Blvd., Detroit, Mich.
- Genesee Precision Tool & Die Co., 105 N. Water St., Rochester, N. Y.
- Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.
- Gilmour, J. Morrison, 149-51 Lafayette St., New York, N. Y.
- Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.
- Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
- Gnome Machine & Tool Co., 820 Livingston St., Elizabeth, N. J.
- Grand Machine Co., 3456 S. Grand Ave., St. Louis, Mo.
- Grand Tool & Machine Works, 161 Grand St., New York, N. Y.
- Gravity Carburetor Co., 3062 E. 93rd St., Cleveland, O.
- Green & Son, John, 231-24 N. Market St., Hoopeston, Ill.
- Greist Mfg. Co., New Haven, Conn.
(See page 559.)
- Gwynn Engineering Co., 100 Liberty Ave., Pittsburgh, Pa.
- H. L. & W. Sales & Mfg. Co., 2755 W. Fort St., Detroit, Mich.
- H. & H. Machine Co., 4274 Easton Ave., St. Louis, Mo.
- Hall Lamp Co., C. M., Detroit, Mich.
- Hall Switch & Signal Co., Garwood, N. J.
- Hammerlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.
- Harbor Machine Co., 183 High St., Boston, Mass.
- Harley Co., 1921 Page Blvd., Springfield, Mass.
- Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.
- Hart Machine & Tool Co., 364 Atlantic Ave., Boston, Mass.
- Hartford Machine Screw Co., Hartford, Conn. (See page 741.)
- Harvey-Hanes Machine Co., 369 Ellicott St., Buffalo, N. Y.

Everything is listed under the NOUN or principal word

MACHINE WORK TO ORDER (Continued)

- Hauser Machine & Mfg. Co., 232 Mill St., Rochester, N. Y.
- Hearn Machine Works, J. C., Columbus, O.
- Hedges Co., B. E., Genesee & Division Sts., Auburn, N. Y.
- Hergi Mfg. Co., Bridgeport, Conn.
- Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.
- Hinckley Machine Works, E. Lincoln Ave., Hinckley, Ill.
- Horat Mfg. Co., J., Lafayette, Ind. (See page 420.)
- Houpert Machine Co., Harris Ave. & Main St., Long Island City, N. Y. (See page 683.)
- Hub Engineering & Machine Co., Hamilton St., Bound Brook, N. J.
- Hudson-Peck Machine Products Co., Real Estate Trust Bldg., Philadelphia, Pa.
- Hussey Power Parts Co., Giddings Rd., Cleveland, O.
- Iles Mfg. Co., E. W., Shelton, Conn.
- Illinois Mfg. & Supply Co., 1455 S. Michigan Ave., Chicago, Ill.
- Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
- Indiana Mould & Machine Works, 1015 S. Council St., Muncie, Ind.
- Indianapolis Tool & Mfg. Co., Indianapolis, Ind. (See page 425.)
- Industrial Electric Mfg. Co., Wayne, Mich.
- Inman Co., H. A., Newark, N. Y.
- International Tool & Gauge Co., 706 Howard Ave., Bridgeport, Conn.
- J. C. H. Automatic Machine Works, 2434 N. Fairhill St., Philadelphia, Pa.
- Jambor Mfg. Co., Milwaukee, Wis.
- Jefferson Iron Works, 548 W. Jefferson Ave., Detroit, Mich.
- Jennings Machine Works, 33 W. Fayette St., Uniontown, Pa.
- Jewellers Toolmaking Co., 220 Eddy St., Providence, R. I.
- Johnson Bronze Co., New Castle, Pa. (See page 174.)
- Johnson Mfg. Co., 103 N. Front St., Philadelphia, Pa.
- Johnson Tool Co., 197-99 Eddy St., Providence, R. I.
- Joliet Die & Tool Co., Joliet, Ill.
- Jones, Mark W., 53d St. & Lansdowne Ave., Philadelphia, Pa.
- Jost's Sons, Edmund, 58 First St., Newark, N. J.
- Jurack Co., Chas., 600 S. Pierce St., Milwaukee, Wis.
- Kaufman Metal Products Co., Bellefontaine, O. (See page 359.)
- Keck Mfg. Co., C., 77-79 Elm St., Cincinnati, O.
- Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
- Kell, Hock & Co., 354 Mulberry St., Newark, N. J.
- Keller Machine & Tool Co., 342 Hudson Ave., West Hoboken, N. J.
- Keller Pneumatic Tool Co., Grand Haven, Mich.
- Kelly Ball Bearing Co., 651 Turk St., San Francisco, Cal.
- Kermath Mfg. Co., 5880 Commonwealth Ave., Detroit, Mich.
- Keuka Industries, Inc., Hammondsport, N. Y.
- Keyless Lock Co., Indianapolis, Ind.
- Kidder Co., R. E., 35 Herman St., Worcester, Mass.
- Kidder-Oswald Co., Dayton, O.
- Killington Machine Co., Industrial Bldg., Syracuse, N. Y.
- Klinger Iron Works, 292 Flushing Ave., Brooklyn, N. Y.
- Knott Mfg. Co., Tell City, Ind.
- Kollmorgen Optical Corp., 85 Steuben St., Brooklyn, N. Y.
- Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
- Krahn Mfg. Co., 588 Clinton St., Milwaukee, Wis.
- Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.
- Kreiter Machine Co., 205 San Jacinto, Houston, Tex.
- Kuhke Machine Co., 48-58 W. Exchange St., Akron, O.
- Laclede Iron Works, 1315 Chestnut St., St. Louis, Mo.
- Ladish Drop Forge Co., Cudahy, Wis. (See page 385.)
- Landis & Sons, A. B. (Chestnut Hill), Philadelphia, Pa.
- Lauer Machine Co., John, 620-26 St. Antoine Lawrence & Co., L., 292 Halsey St., Newark, N. J.
- Leard Co., William, New Brighton, Pa. (See page 297.)
- Lehigh Engineering Co., Royersford, Pa.
- Levy, Benj., 355 W. Broadway, New York, N. Y.
- Lewis Spring & Axle Co., 43 Holler St., Chelsea, Mich.
- Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind.
- Liberty Electric Co., 97 Haverhill St., Boston, Mass.
- Liberty Tool & Gauge Works, 388 Bernon St., Woonsocket, R. I.
- Lincoln Machine Co., 1086 Main St., Pawtucket, R. I.
- Linden & Co., Providence, R. I.
- Link-Belt Co., Indianapolis, Ind. (See page 233.)
- Lodge & Co., 2310 S. Tioga St., Philadelphia, Pa.
- Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.
- Lucas-Miner Tool & Production Co., 427 Valley St., Dayton, O.
- McCadden Machine Works, 502-12 Fourth St., N., St. Cloud, Minn.
- McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.
- McCulloch Mfg. Co., 216 High St., Boston, Mass.
- McDougall & Potter Co., 606-12 W. 55th St., New York, N. Y.
- McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
- McLouth Co., Sidney C., Marine City, Mich.
- Mackenzie, A. S., 11th St. & Ridge Ave., Philadelphia, Pa.
- Mantle & Co., 1907 Park Ave., New York, N. Y.
- Manufacturers Machine Products Co., 1320-68 Mt. Elliot Ave., Detroit, Mich.
- Manufacturers Tool & Die Co., 23 S. Water St., Rochester, N. Y.
- Marf Machine Co., 17-27 Vandewater St., New York, N. Y.
- Marion Screw & Machine Co., 17 N. Fifth St., Philadelphia, Pa.
- Martini & Hunske Co. of America, 1201 Hudson St., Hoboken, N. J.
- Massnick Mfg. Co., 6911 E. Lafayette Ave., Detroit, Mich.
- Meadows Machine Works, Passaic Ave. & Lincoln Highway, Newark, N. J.

Everything is listed under the NOUN or principal word

MACHINE WORK TO ORDER (Continued)

- Medina Mfg. Co., Medina, O.
 Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 423.)
 Metal Machinery Tool Co., 2176 E. 76th St., Cleveland, O.
 Metal Products Mfg. Co., 241-43 W. 23rd St., New York, N. Y.
 Metal Products Service Co., Blackstone Bldg., Cleveland, O.
 Meyer Mfg. Co., A. J., 817-21 John St., West Hoboken, N. J.
 Michigan Motor Parts Corp., 2124 Howard St., Detroit, Mich.
 Michigan Pattern & Machine Works, 3429-39 E. Jefferson Ave., Detroit, Mich.
 Miller, Julius W., 22 Raymond St., So. Norwalk, Conn.
 Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich.
 Milwaukee Forge & Machine Co., Milwaukee, Wis. (See pages 135 and 389.)
 Milwaukee Metal Working Co., 382-88 Clinton St., Milwaukee, Wis.
 Milwaukee Separator Mfg. Co., 247 Madison St., Milwaukee, Wis.
 Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.
 Modern Auto Repair Co., 4605 Olive St., St. Louis, Mo.
 Modern Pattern & Machine Co., 451-53 Monroe Ave., Detroit, Mich.
 Modern Tool, Die Machine Co., 214-20 N. Fourth St., Columbus, O.
 Moore Engineering Co., Hagerstown, Md.
 Modern Tool & Machine Works, 344-50 Mulberry St., Newark, N. J.
 Modern Tool & Mfg. Co., 119 Opera Pl., Cincinnati, O.
 Moon Machine Co., C. & O. & Hackley Sts., Muncie, Ind.
 Moore Engineering Co., Penna Ave. & W. M. R. R., Hagerstown, Md.
 Moran Machine Co., John T., 103-07 Grape St., Syracuse, N. Y.
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)
 Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
 Motor Products & Engineering Co., 1917 E. 61st St., Cleveland, O.
 Motovic Products Corp., 441 State St., Detroit, Mich.
 Murphy Die & Machine Co., A. F., 364-68 Atlantic Ave., Boston, Mass.
 Myer-Moran Co., 212 N. Holliday St., Baltimore, Md.
 National Acme Co., Cleveland, O. (See page 601.)
 National Engineering Co., Broad & Chestnut Sts., Philadelphia, Pa.
 National Metal Products Co., 1016 E. 11th St., Indianapolis, Ind.
 National Sewing Machine Co., Belvidere, Ill.
 National Stamping & Electric Works, 410-26 Clinton St., Chicago, Ill.
 National Welding & Mfg. Co., 1418-30 Niagara St., Buffalo, N. Y.
 Nazareth Foundry & Machine Co., Nazareth, Pa.
 Nelson Tool Co., 782 E. 142d St., New York, N. Y.
 Nestor Mfg. Co., 40 W. 13th St., New York, N. Y.
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 New London Ship & Engine Co., Groton, Conn.
 New Process Specialty Co., 230-32 Hanover St., Milwaukee, Wis.
 Newark Engineering & Tool Co., 476 18th Ave., Newark, N. J.
 Newark Tool & Die Co., 20-22 Lawrence St., Newark, N. J.
 Niagara Machine Works, 1387 Niagara St., Buffalo, N. Y.
 Nilson Machine Co., A. H., 1525 Railroad Ave., Bridgeport, Conn.
 Nilson-Miller Co., 50 13th St., Hoboken, N. J. (See page 719.)
 North Dayton Machine & Tool Co., 126 Valley St., Dayton, O.
 North End Tool Co., 339 Franklin Ave., Bloomfield, N. J.
 North Wales Machine Co., Elm Ave. & Center St., North Wales, Pa.
 Oakes Co., Indianapolis, Ind. (See page 369.)
 Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
 Olson & Dettle Co., 219 W. Seventh St., Sioux Falls, S. Dak.
 Omar Tool & Machine Co., 17th & Clinton Sts., St. Louis, Mo.
 Otto Metal Goods Corp., Wm. H., 401-07 St. Paul's Ave., Jersey City, N. J.
 Paramount Tool Co., 102 St. Clair Ave., N. W., Cleveland, O.
 Parker White Metal & Machine Co., Erie, Pa. (See page 203.)
 Parker & Harper Mfg. Co., 18 Grafton St., Worcester, Mass.
 Pearce Co., Fred'k., 18-20 Rose St., New York, N. Y.
 Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.
 Perfection Auto Parts Co., 410 Lakeside Ave., N. W., Cleveland, O.
 Perfection Parts Mfg. Co., 2401 Superior St. W., Cleveland, O.
 Phoenix Mfg. Co., Grand River at Loraine, Detroit, Mich. (See page 725.)
 Piper Machine Co., 560-70 N. Elder Ave., Indianapolis, Ind.
 Pittsburgh Reinforced Brazing & Machine Co., 2525 Liberty Ave., Pittsburgh, Pa.
 Plum & Little, 30 N. Water St., Rochester, N. Y.
 Portland Forge & Foundry Co., Portland, Ind.
 Potter Tool & Machine Works, S. A., 69 E. 130th St., New York, N. Y.
 Power, Laurence C., 712 Cherry St., Philadelphia, Pa.
 Premier Machine Tool Works, 1031 Broadway, Albany, N. Y.
 Precision Gauge & Tool Co., 166 Elm St., Bridgeport, Conn.
 Premier Mfg. Co., Sandy Hook, Conn.
 Prime Mfg. Co., Milwaukee, Wis. (See page 187.)
 Printing Machinery Co., Cincinnati, O.
 Producers' Machine & Specialty Corp., 61-65 Elizabeth St., Rochester, N. Y.
 Progressive Tool Mfg. Co., Fifth St., Beloit, Wis.
 Puritan Machine Co., 423 Lafayette Blvd., Detroit, Mich.
 Queen City Tool Co., 778 Kensington Ave., Buffalo, N. Y.
 Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
 Recording Devices Co., 584 W. Fifth St., Dayton, O.
 Reese Machine & Tool Works, 224-30 W. Main St., Plymouth, Pa.
 Reifsnider, A. L., 1416 Madison Ave., Baltimore, Md.
 Rex Machine & Tool Co., 24 Scott St., Newark, N. J.

Everything is listed under the NOUN or principal word

MACHINE WORK TO ORDER (Continued)

- Reynolds Engineering Co., First St. & Third Ave., Moline, Ill.
- Rider-Bagg Co., 369 Birnie Ave., Springfield, Mass.
- Riverside Machine Co., Front & Penn Sts., Chester, Pa.
- Rochester Auto & Tool Co., 17 Andrews St., Rochester, N. Y.
- Rochester Motors Co., 634 Lexington Ave., Rochester, N. Y.
- Rockford Drilling Machine Co., Ft. of Catherine St., Rockford, Ill.
- Rome Engineering Co., 103 S. George St., Rome, N. Y.
- Rosbach Co., F. P., Benton Harbor, Mich.
- Roselle Machine & Tool Co., Roselle, N. J.
- Ross Machine Co., 1213-15 W. Seventh St., Lafayette, Ind.
- Ross Machine Co. (Wollaston), Quincy, Mass.
- Ryman, L. M., 323 St. John St., New Haven, Conn.
- S. A. Machine Co., 2114 E. Woodbridge St., Detroit, Mich.
- "S-C" Regulator Co., Perry & High Sts., Fostoria, O.
- S. & H. Machine & Tool Co., 23 Elizabeth St., Albany, N. Y.
- Sanford Mfg. Co., F. C., 2060 Fairfield Ave., Bridgeport, Conn.
- Sayre Stamping Co., Lockhart Bldg., Sayre, Pa.
- Schaefer Mfg. Co., Pearl St., Berlin, Wis.
- Schickel Motor Co., 55 Garden St., Stamford, Conn.
- Schnorr Co., J. J., 799 Golden Gate Ave., San Francisco, Cal. (See page 429.)
- Schroeder Bros. Mfg. Co., 110 Brook St., Torrington, Conn.
- Seavill Mfg. Co., Waterbury, Conn. (See page 745.)
- Sears Tire Equipment Co., Davenport, Ia. (See page 595.)
- Seavey Machine Works, Eugene, 359 Pearl St., New York, N. Y.
- Security Tool Works, Jackson Blvd., Chicago, Ill.
- Selik Bros., 2532 24th St., Detroit, Mich. (See page 627.)
- Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.
- Shambow Shuttle Co., 601 N. Main St., Woonsocket, R. I.
- Sherman, Alfred E., 99 Friendship St., Providence, R. I.
- Shields Machine Co., Whitney Power Bldg., Cleveland, O.
- Shimer & Sons, Samuel J., Milton, Pa.
- Shipman Machine Co., 213 Summer St., Boston, Mass.
- Sier-Bath Co., 143 W. 54th St., New York, N. Y. (See page 425.)
- Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
- Simplex Tool Co., Social St., Woonsocket, R. I.
- Slocumb & Co., F. F., 14th & Poplar Sts., Wilmington, Del.
- Smith Mfg. Co., Philip, Sidney, O.
- Smith & Co., E. M., Peoria, Ill.
- Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
- Special Hardware Corp., 181 S. Portland Ave., Brooklyn, N. Y. (See page 961.)
- Specialty Gauge & Tool Co., 30-32 E. Georgia St., Indianapolis, Ind.
- Specialty Products Co., 236 South St., Newark, N. J.
- Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
- Staats & Co., Geo., 76 Bayard St., Brooklyn, N. Y.
- Stafford Machine Works, 2201-05 Campbell Ave., Kansas City, Mo.
- Standard Gear Co., 5930 Commonwealth Ave., Detroit, Mich.
- Standard Separator Co., 45th St., & Burnham Rd., Milwaukee, Wis.
- Star Tool & Mfg. Co., 4520 Lexington St., Chicago, Ill.
- Stearns Aero Parts Co., 203 St. Clair Ave., N. E., Cleveland, O.
- Steele Machine Co., 713 First St., Utica, N. Y.
- Steele & Condit, 74 Pearl St., Jersey City, N. J.
- Steering Gear & Parts Co., 700 Harper Ave., Detroit, Mich.
- Steger & Sons Piano Mfg. Co. (Industrial Division), Steger, Ill.
- Sterling Engine Co., 333 S. Clinton St., Chicago, Ill.
- Sterling Tool & Machine Co., 245-09 W. 19th St., New York, N. Y.
- Stiles Mfg. Co., St. Louis, Mo. (See page 471.)
- Sundstrom Mfg. Co., Shields Ave. at 32d St., Chicago, Ill.
- Superb Mfg. Co., Monticello, Ind.
- Superior Machine & Engineering Co., 451 E. Fort St., Detroit, Mich.
- Superior Tool & Die Works, 313 S. Clinton St., Chicago, Ill.
- Superior Tool & Mfg. Co., 3 Reeves St., Worcester, Mass.
- T. C. M. Mfg. Co., Hunterdon & First Sts., Harrison, N. J.
- Taft-Pierce Mfg. Co., Woonsocket, R. I.
- Taylor Machine Co., 7804 Carnegie Ave., Cleveland, O.
- Taylor-Shantz Co., 478 St. Paul St., Rochester, N. Y.
- Textile Machine Works, Reading, Pa.
- Thorn Machine Tool Works, 107 N. Franklin St., Syracuse, N. Y.
- Tisch Machine Tool & Die Works, 452-54 Spring St., Elizabeth, N. J.
- Tool & Machine Products Co., Waldo St., Newark, O.
- Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.
- Tranter Mfg. Co., 105 Water St., Pittsburgh, Pa. (See page 323.)
- Traylor Engineering & Mfg. Co., Cornwells, Pa.
- Triangle Tool of Erie Co., 163 E. Eighth St., Erie, Pa.
- Truck Parts & Foundry Co., Alma, Mich.
- Twin City Die & Tool Works, 4523 Sixth Ave., Rock Island, Ill.
- U. S. Axle Co., Pottstown, Pa. (See page 81.)
- Ultimate Machine Works, 309 Centre St., New York, N. Y.
- Unger Bros., Newark, N. J.
- Union Gear & Machine Co., 27 Purchase St., Boston, Mass.
- United Machine Works, 55-57 W. Third St., New York, N. Y.
- United Mfg. & Distributing Co., Lake Shore Drive & Ohio St., Chicago, Ill.
- Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.
- Up-To-Date Machine Works, 2915 Wash Ave., Chicago, Ill. (See page 735.)
- Vahan Products Co., E. 73d St. & St. Clair Ave., N. W., Cleveland, O.
- Van Brass & Specialty Co., 3249 W. Ohio St., Chicago, Ill.

Everything is listed under the NOUN or principal word

MACHINE WORK TO ORDER (Continued)

Varick Machine & Tool Works, 143 Varick St., New York, N. Y.
 Viking Tool & Machine Co., 56th St. bet. Seventh & Eighth Aves., Brooklyn, N. Y.
 Vulcan Brazing & Machine Co., 2126-30 Race St., Philadelphia, Pa.
 (See page 637.)
 Walker Co., H. J., 131st St. & Taft Ave., Cleveland, O.
 Wallace & Henry, 241-43 W. 23rd St., New York, N. Y.
 Walsh & Allen, 15 Wilbur Ave., Long Island City, N. Y.
 Ware Bros., Automatic Products, 224 N. Ada St., Chicago, Ill.
 Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
 Waterbury Castings Co., Railroad Hill St., Waterbury, Conn.
 Watkins Nut Co., 2013 Franklin St., Detroit, Mich.
 Wayne Works, 16th & North F Sts., Richmond, Ind.
 Wemaco—See Western Metal Specialty Co.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 471.)
 Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemaco."
 Western Pump Co., 428 Third St., Davenport, Ia.
 Western Reserve Mfg. Works, 3710 E. 93rd St., Cleveland, O.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
 Whatley Co., A. H., 209 Cranston St., Providence, R. I.
 Wheeler & Sou, Frank, 55 Stone St., Meriden, Conn.
 White Mfg. Co., Ninth St. & E. Lincoln Ave., Goshen, Ind.
 Wicaco Screw & Machine Works, Seventh & Wood Sts., Philadelphia, Pa.
 Wilcox Motor Parts & Mfg. Co., Saginaw, Mich. (See page 917.)
 Wilkie's Machine Works, 208 W. Third St., Winona, Minn.
 Williams, Franklin, 251 Jefferson St., Newark, N. J. (See page 75.)
 Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 729.)
 Woods Engineering Co., 108 E. Patterson St., Alliance, O.
 Worcester Job Shop, 21 Cypress St., Worcester, Mass.
 Wright Machine Co., 321 E. Second St., Owensboro, Ky.
 York Electric & Machine Co., 30-34 N. Penn St., York, Pa.
 Young & Franklin, Industrial Bldg., Syracuse, N. Y.
 Zacharias, Edwin H., 121 Washington St., Reading, Pa.
 Zagora Mfg. Co., J., 1309 S. Mint St., Charlotte, N. C.
 Zarem & Rose, 174 Centre St., New York, N. Y.
 Zeffang Machine Co., 325 Linwood Ave., Niagara Falls, N. Y.
 Zeigler Mfg. Co., 316 S. Central Ave., Alexandria, Ind.
 Zehr, Henry, 200 William St., New York, N. Y.
 Zumeta Machine Co., 310 W. 39th St., New York, N. Y.

MACHINERY, Dealers in

(Comprising only Dealers in Machinery who advertise in this Publication)

Fairbanks Co., New York, N. Y.
 (See pages 491 to 494.)

MACHINERY DESIGNERS—See Designers, Special Machinery and Tool

MACHINERY SPRINGS—See Springs, Machinery

MACHINES, Autogenous Welding

(Oxy-Acetylene Welding Apparatus)

Admiral Welding MacInne Co., 1605 Locust St., Kansas City, Mo.
 American Welding Co., St. Louis, Mo.
 Ashton, Laird & Co., 603-07 W. 43d St., New York, N. Y. "Astra."
 Astra—See Ashton, Laird & Co.
 Bastian-Blessing Co., W. Austin Ave. & La Salle St., Chicago, Ill. "Rego."
 Bermo—See Bertschy Engineering Co.
 Bertschy Engineering Co., 802 N. 16th St., Omaha, Neb. "Bermo."
 Bishop & Babcock Co., 1200 E. 55th St., Cleveland, O.
 Buckeye—See MacLeod Co.
 Cox Brass Mfg. Co., Albany, N. Y.
 (See page 168.)
 Davis-Bournonville Co., Van Wagenen Ave., Jersey City, N. J.
 Dyer Co., 155 Brookline St., Cambridge, Mass.
 Economy Welding Machine Co., 2007 Central St., Kansas City, Mo.
 Erie Welding Equipment Co., Mill Rd., Hamilton, O.
 Eveready—See Oxweld Acetylene Co.
 Fidelity Brass Mfg. Co., 1001 W. Washington St., Chicago, Ill.
 General Welding Co., 355-57 14th St., Hoboken, N. J. "Ideal."
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Havens Bros. Mfg. & Supply Co., 1622 Wasee St., Denver, Colo.
 Henderson-Willis Welding & Cutting Co., 2305 N. 11th St., St. Louis, Mo.
 Ideal—See General Welding Co.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Liquid Carbonic Co., 3100 S. Kedzie Ave., Chicago, Ill.
 MacLeod Co., 2232 Bogen St., Cincinnati, O. "Buckeye."
 Meco—See Modern Engineering Co.
 Messer Welding Supply Corp., 101-13 11th St., Brooklyn, N. Y.
 Metal Welding & Supply Co., 1440 Blake St., Denver, Colo.
 Metals Welding Co., 4400 Perkins Ave., Cleveland, O.
 Milburn Co., Alexander, 1420-28 W. Baltimore St., Baltimore, Md.
 Modern Engineering Co., 23rd & Walnut Sts., St. Louis, Mo. "Meco."
 Nev-O-Fall—See Turner Brass Works.
 Never-Flash—See Torchweld Equipment Co.
 Oxweld Acetylene Co., 3643 Jasper Pl., Chicago, Ill. "Eveready."
 Oxy-Carbi Co., 396 George St., New Haven, Conn.
 Rego—See Bastian-Blessing Co.
 Rego—See Universal Oxygen Co.
 Russ Co., A. E., Cleveland, O.
 Saylor Co., F. A., 3271-73 Woodland Ave., Philadelphia, Pa.
 Schaap Automobile Co., 344 Cumberland St., Brooklyn, N. Y. (See page 718.)
 Schemmel Welding Machine Works, Wapakoneta, O.

Everything is listed under the NOUN or principal word

**MACHINES, Autogenous Welding
(Continued)**

- Standard Gas Products Co., 216 Ivy St., Atlanta, Ga.
 Suffolk Casting & Supply Co., 156 Pearl St., Boston, Mass.
 Superior Oxy-Acetylene Machine Co., 1102 E. High St., Hamilton, O.
 Tolman Mfg. Co., 19-21 W. Third St., Boston, Mass.
 Torch Weld Equipment Co., 224 N. Carpenter St., Chicago, Ill. "Never-Flash."
 Turner Brass Works, Sycamore, Ill. "Nev-O-Fall."
 United States Welding Co., 120 N. First St., Minneapolis, Minn.
 Universal Oxygen Co., 14th & Illinois Sts., Sheboygan, Wis. "Rego."
 Waterhouse Welding Co., 15 Pelham St., Boston, Mass.
 Weldrite Co., 100-04 Hunter Ave., Long Island City, N. Y.

MACHINES, Automatic Piston and Ring

- National Acme Co., Cleveland, Ohio.
 (See page 601.)
 Potter & Johnston Machine Co., 1027 Newport Ave., Pawtucket, R. I.
 Steinkle Turret Machine Co., Madison, Wis.
 (See page 513.)

**MACHINES, AUTOMATIC SCREW—See
Machines, Screw****MACHINES, Balancing**

(For Balancing Weights—See Weights, Balancing)

- Akimoff—See Vibration Specialty Co.
 Carwen—See Lippencott-Carwen Corp.
 Lippencott-Carwen Corp., Erie Ave. & Richmond St., Philadelphia, Pa. "Carwen."
 Olsen Testing Machine Co., Tinius, 500 N. 12th St., Philadelphia, Pa.
 N. W. A.—See Vibration Specialty Co.
 Vibration Specialty Co., Harrison Bldg., Philadelphia, Pa. "Akimoff." "N. W. A."
 (See page 559.)

**MACHINES, BAND SAWING—See Saws,
Band****MACHINES, BANDAGE WRAPPING—See
Machines, Tire Bandage Wrapping****MACHINES, BEADING—See Machines,
Crimping****MACHINES, BEARING REAMING—See
Reamers, Main Bearing and Connecting
Rod for Fords.****MACHINES, Blue Printing**

- Pease Co., C. F., 839 N. Franklin St., Chicago, Ill.
 Wagenhorst Co., J. H., Dollar Bank Bldg., Youngstown, O.
 Wickes Bros., 2501 Water St., Saginaw, Mich.

MACHINES, Body Rubbing

- Brown—See Franklin Products.
 Franklin Products, 1052 S. Clinton St., Syracuse, N. Y. "Brown."

MACHINES, Boring

(Horizontal)

- Beaman & Smith Co., 20 Gordon Ave., Providence, R. I.
 Cleveland Machine Tool Works, 3215 Superior Ave., Cleveland, O.
 Conradson Machine Tool Co., Ninth & State Sts., Green Bay, Wis.
 Giddings & Lewis Machine Tool Co., 142 Doty St., Fond du Lac, Wis.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Kriesel—See Mill City Co.
 Lucas Machine Tool Co., 523 E. 99th St., Cleveland, O. "Precision."
 Mill City Co., Minneapolis, Minn. "Kriesel."
 Morris Machine Tool Co., Court & Harriet Sts., Cincinnati, O.
 National Lathe Co., 11-15 W. Second St., Cincinnati, O.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Precision—See Lucas Machine Tool Co.
 Rockford Drilling Machine Co., Foot Catherine St., Rockford, Ill.
 Universal Boring Machine Co., 30 Tower St., Hudson, Mass.

MACHINES, Boring

(Vertical)

- Baker Bros., Westlake Ave. & Post St., Toledo, O.
 Beaman & Smith Co., 20 Gordon Ave., Providence, R. I.
 Bullard Machine Tool Co., Broad St. & Railroad Ave., Bridgeport, Conn.
 Colburn Machine Tool Co., 1033 Ivanhoe Rd., Cleveland, O.
 Foote-Burt Co., 4101 St. Clair Ave., Cleveland, O.
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Hoefler Mfg. Co., Chicago & Jackson Sts., Freeport, Ill.
 Hole-Hog—See Moline Tool Co.
 King Machine Tool Co., Winton Place St., Cincinnati, O.
 La Pointe Machine Tool Co., Hudson, Mass.
 Moline Tool Co., 102 20th St., Moline, Ill. "Hole-Hog."
 National Lathe Co., 11-15 W. Second St., Cincinnati, O.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

**MACHINES, BOW DRESSING — See Ma-
chines, Top Bow Dressing****MACHINES, Brake Band Riveting**

(For Brake Band Riveting Jigs—See
Machines, Brake Band Riveting)

- Hinckley-Myers Co., Water St., Jackson, Mich.
 Shepard-Thomason Co., 506-08 W. Pico St., Los Angeles, Cal. "Thomason."
 (See page 629.)
 Thomason—See Shepard-Thomason Co.

Everything is listed under the NOUN or principal word

MACHINES, Brake Band Riveting for Fords

(For Brake Band Riveting Jigs—See Machines, Brake Band Riveting)

Brochu, A. D., 5 Pavillion St., Hartford, Conn.
 Hinckley-Myers Co., Water St., Jackson, Mich.
 Shepard-Thomason Co., 506-08 W. Pico St., Los Angeles, Cal. "Thomason."
 (See page 629.)
 Thomason—See Shepard-Thomason Co.

MACHINES, Broaching

American Broach & Machine Co., 415 W. Huron St., Ann Arbor, Mich.
 Broach Well—See Velco Mfg. Co.
 Connecticut Broach & Machine Co., 376 Bank St., New London, Conn.
 La Pointe Co., J. N., New London, Conn.
 Lapointe Machine Tool Co., 34 Tower St., Hudson, Mass.
 Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
 Velco Mfg. Co., 305 Wells St., Greenfield, Mass.
 "Broach Well."

MACHINES, Burning-In for Fords

Allred—See Sutton Auto Co.
 American—See Service Station Equipment Co.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)
 Danielson Tool Co., Fulton St., Wausau, Wis.
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)
 Detroit Garage Equipment Co., 38 Hendrie St., Detroit, Mich.
 Jansen Machine Co., Theo. W., 741 21st St., Des Moines, Ia.
 Littell Machinery Co., 532-34 Washington St., Spokane, Wash.
 Miles Mfg. Co.—See Zinke Co.
 Nazett Mfg. Co., 1440 Washington St., Eldora, Iowa.
 Phoenix Mfg. Co., North Side, Eau Claire, Wis.
 Railway Specialty Co., Atchison, Kana.
 "Rysco."
 Rysco—See Railway Specialty Co.
 Service Products Co., Greenawalt Bldg., Springfield, O.
 Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."
 Smith Co., F. B., 36 Pyatt St., Youngstown, O.
 Sutton Auto Co., C. R., 211-13 Buchanan St., Greensboro, N. C. "Allred."
 Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Miles Mfg. Co., Newton, Ia.)

MACHINES, BUTTON — See Machines, Upholstery Button

MACHINES, CALCULATING — See Machines, Adding and Calculating

MACHINES, Cam Cutting

Standard Machinery Co., Auburn, R. I.
 (See page 115.)

MACHINES, CARBON BURNING—See Machines, Engine Decarbonizing

MACHINES, CHAIN REPAIR—See Tools, Tire Chain Repairs

MACHINES CHAMFERING — See Machines, Gear Tooth Chamfering

MACHINES, Crimping and Beading

Peck, Stow & Wilcox Co., Southington, Conn.
 "Pexto."
 Pettigall Machine Co., 77 Elm St., Amesbury, Mass.
 Pexto—See Peck, Stow & Wilcox Co.
 Quickwork Co., Celina Rd., St. Marys, O.

MACHINES, CYLINDER GRINDING — See Grinders, Cylinder

MACHINES, CYLINDER REGRINDING—See Grinders, Cylinder

MACHINES, DECARBONIZING—See Machines, Engine Decarbonizing

MACHINES, Cylinder Boring

(See also Machines, Boring; also Bore, Boring; also Tools, Portable Cylinder Boring)

Baker Bros., Westlake Ave. & Post St., Toledo, O.
 Foote-Burt Co., 4101 St. Clair Ave., Cleveland, O.
 Hinckley-Myers Co., Water St., Jackson, Mich.
 Krieger Tool & Mfg. Co., Wisconsin Rapids, Wis.
 Marvel Machinery Co., Minneapolis, Minn.
 Mill City Co., Minneapolis, Minn.
 Storm Mfg. Co., Minneapolis, Minn.

MACHINES, Die Cutting

Anderson Die Machine Co., 544 Iranston Ave., Bridgeport, Conn.
 Hergl Mfg. Co., Bridgeport, Conn.
 Keller Mechanical Engraving Co., 72 Washington St., Brooklyn, N. Y.

MACHINES, Double Tread Tire Stitching

Bosworth Machinery Co., Campbell, 306 Lincoln St., Boston, Mass.
 Landis Machine Co., 1515-27 N. 25th St., St. Louis, Mo.

MACHINES, DRESSING—See Machines, Top Bow Dressing

MACHINES, DRILLING—See Drills

MACHINES, Electric Tire Buffing

Clark, Jr., Electric Co., James, 520 W. Main St., Louisville, Ky. "Willey."
 Dri-Kure—See Western Vulcanizer Mfg. Co.

Everything is listed under the NOUN or principal word



The Secret of Vibration Elimination

Will be gladly shared with any interested inquirer.

ITS desirability in automotive construction is being recognized by purchasers of moderate and high priced cars. They are demanding that freedom from annoyance to which they are obviously entitled.

Balancing Machines and Balancing Problems are our sole interests.

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VIBRATION SPECIALTY CO.
Harrison Bldg., Philadelphia, U. S. A.

THE BILTON Gear Milling Machine

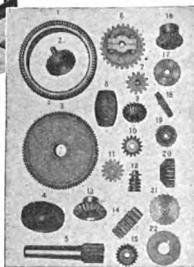
For Spur and Bevel Gears and Many Special Milling Operations



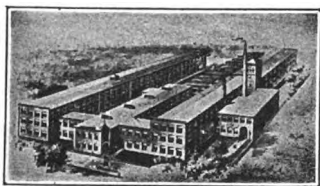
Entirely automatic in operation. Wide range of usefulness. Made in three convenient sizes.

Automobile factories find them especially useful for automatic milling operations.

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BRIDGEPORT, CONN., U. S. A.



GREIST QUALITY SERVICE

IN THE MANUFACTURE OF ACCURATE MECHANICAL SPECIALTIES AND ACCESSORIES IT IS UNEXCELLED

TELL US YOUR PROBLEM

A MODERN PLANT AND A SKILLED ORGANIZATION IS AT YOUR SERVICE

The world's largest
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Sewing Machine
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The Greist Manufacturing Co.
NEW HAVEN, CONN.

Automobile
Accessories
and Contract
Manufacturing

Please mention The Automobile Trade Directory

MACHINES, Electric Tire Buffing (Continued)

- Haskins Co., R. G., 27 S. Desplaines St., Chicago, Ill. (See page 561.)
 H-B—See Hobart Bros. Co.
 Hobart Bros. Co., Troy, O. "H-B."
 Johnson—See U. S. Electrical Mfg. Co.
 Le Bron Electrical Works, 318 S. 12th St., Omaha, Neb.
 Muller Flexible Shaft Co., 2307 W. Como Ave., St. Paul, Minn.
 Strand & Co., N. A., 549 W. Washington St., Chicago, Ill.
 U. S. Electrical Mfg. Co., 300 S. Central Ave., Los Angeles, Cal. "Johnson." (See page 561.)
 Willey—See Clark, Jr., Electric Co.
 Western Vulcanizer Mfg. Co., 150 N. Desplaines St., Chicago, Ill. "Dri-Kure."

MACHINES, Electric Welding

- Agnew Electric Welder Co., Milford, Mich.
 Allan Mfg. & Welding Corp., 163 Adams St., Buffalo, N. Y.
 Arc Welding Machine Co., 525 W. 45th St., New York, N. Y.
 Electric Arc Cutting & Welding Co., 152-58 Jelliff Ave., Newark, N. J.
 Federal Machine & Welder Co., Dana Ave., Warren, O.
 General Electric Co., Schenectady, N. Y. (See page 697.)
 Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. (See page 843.)
 Gibb Instrument Co., 348 Palmer Ave., E., Detroit, Mich. "Zeus."
 Lincoln Electric Co., 38th St. & Kelley Ave., N. E., Cleveland, O.
 Taylor Welder Co., Warren, O. (See page 911.)
 Thomson Electric Welding Co., 166 Pleasant St., Lynn, Mass.
 Wilson Welder & Metals Co., 253-36th St., Brooklyn, N. Y.
 Winfield Electric Welding Machine Co., Warren, O. (See page 911.)
 Zeus—See Gibb Instrument Co.

MACHINES, Engine Decarbonizing

- (Oxygen carbon burning outfits; for Chemical Carbon Removers—See Compounds, Carbon; for Oxide or Ball Removers—See Removers, Carbon; for Steam Carbon Removers—See Molitors, Air or Mixture)*
 Ashton, Laird & Co., 603-07 W. 43rd St. New York, N. Y. "Astra."
 Astra—See Ashton, Laird & Co.
 Auto Gas Light Co., Hazleton, Pa. "M-M."
 Bateman Bros., 419 E. Bank St., Centerville, Ia. "O-So-Easy."
 Bermo—See Bertschy Engineering Co.
 Bertschy Engineering Co., 802 N. 16th St., Omaha, Neb. "Bermo."
 Bishop & Babcock Co., 1200 E. 55th St., Cleveland, O. "Eureka."
 Brooks Machine Co., 225 W. Lewis St., Wichita, Kans.
 Champion—See Cleveland Faucet Co.
 Cleveland Faucet Co., 708 Frankfort Ave., N. W., Cleveland O. "Champion."

- Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)
 Davis-Bournonville Co., Van Wagenen Ave., Jersey City, N. J.
 Dyer Co., 155 Brookline St., Cambridge, Mass.
 Eureka—See Bishop & Babcock Co.
 Fidelity Brass Mfg. Co., 1001 W. Washington St., Chicago, Ill.
 Farrier Mfg. Co., G. F., 281 S. Euclid Ave., Pittsburgh, Pa.
 General Welding Co., 355-57 14th St., Hoboken, N. J. "Novel."
 Henderson-Willis-Welding & Cutting Co., 2305 N. 11th St., St. Louis, Mo.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Liquid Carbonic Co., 3100 S. Kedzie Ave., Chicago, Ill.
 M-E—See Auto Gas Light Co.
 Milburn Co., Alexander, 1420-28th W. Baltimore St., Baltimore, Md.
 Novel—See General Welding Co.
 O-So-Easy—See Bateman Bros.
 Oxweld Acetylene Co., 3642 Jasper Pl., Chicago, Ill.
 Prest-O-Carbon—See Prest-O-Lite Co.
 Prest-O-Lite Co., 1400 Speedway, Indianapolis, Ind. "Prest-O-Carbon."
 Shonts Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (See page 151.)
 Stay-lit—See Torchweld Equipment Co.
 Superior Oxy-Acetylene Machine Co., 1103 E. High St., Hamilton, O.
 Tolman Mfg. Co., 19-21 W. Third St., Boston, Mass.
 Torchweld Equipment Co., 224 N. Carpenter St., Chicago, Ill. "Stay-lit."
 United States Welding Co., 130 N. First St., Minneapolis, Minn.
 Vulite Chemical Co., 8 Sears St., Boston, Mass.
 Waterhouse Welding Co., 15 Pelham St., Boston, Mass.

MACHINES, Fender Rolling

- Cleeso—See Cleesattel & Sons.
 Cleesattel & Sons, Wm., 157-61 Walden Ave., Buffalo, N. Y. "Cleeso."
 Yoder Co., Walworth Ave. & 58th St., Cleveland, O.

MACHINES, FENDER STRAIGHTENING— See Tools, Fender Straightening

MACHINES, Fender Wiring

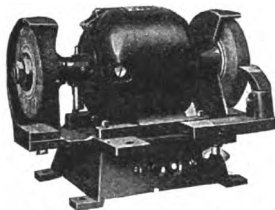
- Magee Sheet Metal Machinery Co., 728 Vermont Ave., Detroit, Mich.
 Yoder Co., Walworth Ave. & 58th St., Cleveland, O.

MACHINES, FIGURING — See Machines, Adding and Calculating

MACHINES, Gear Cutting

- Bilgram Machine Works, 1235 Spring Garden St., Philadelphia, Pa.
 Bilton Machine Tool Co., Bridgeport, Conn. (See page 559.)
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Cincinnati Gear Cutting Machine Co., Ham St. & Garrard Ave., Cincinnati, O.

Everything is listed under the NOUN or principal word

PORTABLE**"HASKINS"
SHOP EQUIPMENT****ELECTRIC****BENCH GRINDER**

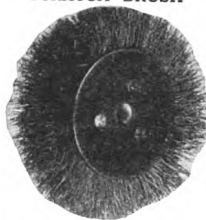
The tool illustrated here is 14" wide, 10" high and weighs 55 pounds. The construction is scientific and sturdy. The motor is of one-quarter H.P. capacity with a speed of 3500 R.P.M. with large overload capacity. The grinding wheels are $\frac{3}{4}$ " x 5".

Rasp

Rasp is constructed with steel flanges $\frac{5}{16}$ " in diameter with a 2-inch buffing face. Furnished for grinding $\frac{3}{4}$ ", 1", $1\frac{1}{2}$ " and $1\frac{3}{4}$ " in diameter.

TIRE BUFFER**Type
RB 5****SPECIFICATIONS**

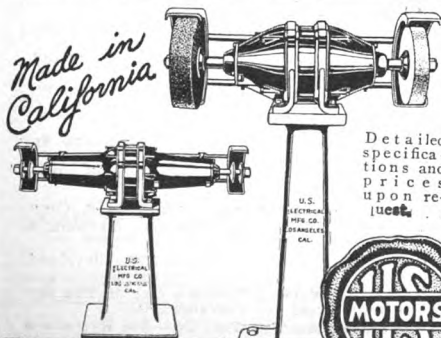
Motor $\frac{1}{4}$ H. P. Ball Bearing.
Shaft 7-16 in. x 5 ft. metal wound shaft.
Speed 1,750 R. P. M.
Grinding Wheel, Scratch Brush and Cone Rasp.
Price \$100.00 F. O. B. Chicago.
Specify voltage and current when ordering.

SCRATCH BRUSH**GRINDING WHEEL****ACCESSORIES****CONE RASP**

R. G. HASKINS COMPANY
7 SO. DESPLAINES ST. CHICAGO, ILL.

Built for the Vulcanizer

*Put these profit makers
to work in your shop*



Detailed specifications and prices upon request.

U. S. Electric Buffers are made for the Tire Vulcanizer—designed to do his work. Compact—powerful—economical—safe for the worker—durable little wonders which will make money for every shop using either or both. Not an untried experiment but machine-tools which are piling up profits for hundreds of users.

The power of a U. S. Electric Buffer is applied direct to the wheel. It gives more than four times the efficiency of the old, obsolete buffing head with its inevitable loss of power from slipping belts. The U. S. Buffers are complete, occupying very little room, and are highly efficient.

Made to operate on alternating current, 110-220-440-550 volts, 1, 2 or 3 phase, 25-40-50-60 cycles, or direct current, 110-220 volts.

U. S. Electrical Mfg. Co.
300 South Central Avenue, Los Angeles, Calif.

U.S. ELECTRIC TIRE BUFFERS

Please mention The Automobile Trade Directory

MACHINES, Gear Cutting (Continued)

Fellows Gear Shaper Co., 24 Pearl St., Springfield, Vt.
 Flather Mfg. Co., E. J., 46 Spring St., Nashua, N. H.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Gleason Works, 1000 University Ave., Rochester, N. Y.
 Gould & Eberhardt, Coit & Chancellor Ave., Irvington, N. J.
 Lees-Bradner Co., 6210 Carnegie Ave., Cleveland, O.
 Machine Products Co., E. 179th & St. Clair Aves., Cleveland, O.
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Newark Gear Cutting Machine Co., 67-69 Prospect St., Newark, N. J.
 Sloan & Chase Mfg. Co., 351 Sixth Ave., Newark, N. J.
 Whiton Machine Co., D. E., 190 Howard St., New London, Conn.

MACHINES, Gear Hobbing

Adams Co., 295 Sixth St., Dubuque, Ia.
 Barber-Colman Co., Rockford, Ill.
 Bilton Machine Tool Co., Bridgeport, Conn. (See page 559.)
 Cincinnati Gear Cutting Machine Co., Elam St. & Garrard Ave., Cincinnati, O.
 Gould & Eberhardt, Coit & Chancellor Ave., Irvington, N. J.
 Jones Superior Machine Co., 1258-72 W. North Ave., Chicago, Ill.
 Lees-Bradner Co., 6210 Carnegie Ave., Cleveland, O.
 Melsselbach-Catucci Mfg. Co., 51-55 Stanton St., Newark, N. J.
 Newark Gear Cutting Machine Co., 67-69 Prospect St., Newark, N. J.

MACHINES, Gear Tooth Chamfering

Betts Machine Co., Rochester, N. Y. "Ingle."
 Cross Gear & Engine Co., 3260 Bellevue Ave., Detroit, Mich.
 Ingle—See Betts Machine Co.
 Walker Machinery Co., Chas. H., 709 Loraine Ave., Detroit, Mich.

MACHINES, GRINDING—See Machines, Valve Grinding**MACHINES, Hair Picking**

Atlas—See Curtis & Marble Machine Co.
 Curtis & Marble Machine Co., 73 Cambridge St., Worcester, Mass. "Atlas."
 Prize—See Willcomb Co.
 Willcomb Co., Geo., 62 Chardon St., Boston, Mass. "Prize."

MACHINES, HAND SCREW—See Machines, Screw**MACHINES, HINGE FORMING—See Machines, Hood Hinge Forming****MACHINES, HOBBING—See Machines, Gear Hobbing****MACHINES, Hood Hinge Forming**

Yoder Co., Walworth Ave. & 58th St., Cleveland, O.

MACHINES, HORIZONTAL BORING—See Machines, Boring**MACHINES, LEAD BURNING—See Burners, Lead****MACHINES, Leaf Spring Straightening**

Lauer Machine Co., John, 620-26 Antoine St., Detroit, Mich.

MACHINES, Leather Measuring

Nightingale, J. E., 15 Mill St., Danvers, Mass.
 Tufting Machine Supply Co., 406 E. Jefferson Ave., Detroit, Mich.
 Turner Tanning Machinery Co., Peabody, Mass.

MACHINES, Louvre Forming

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. (See page 251.)

MACHINES, Metal Testing

(For Metal Testing Instruments—See Instruments, Metal Testing)

Brinell—See Holz, Herman A.
 Holz, Herman A., 17 Madison Ave., New York, N. Y. "Brinell."
 Olsen Testing Machine Co., Tinius, 500 N. 12th St., Philadelphia, Pa.
 Pittsburgh Instrument & Machine Co., 40 Water St., Pittsburgh, Pa.

MACHINES, Milling

Adams Co., 295 Sixth St., Dubuque, Ia.
 American Milling Machine Co., Richmond St. & McLean Ave., Cincinnati, O.
 Beaman & Smith Co., 20 Gordon Ave., Providence, R. I.
 Becker Milling Machine Co., 53 Franklin St., Boston, Mass.
 Briggs—See Gooley & Edmund.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Burke Machine Tool Co., Sandusky St., Conneaut, O.
 Carter & Hakes Machine Co., Winsted, Conn.
 Cincinnati Milling Machine Co., Marburg & South Sts., Cincinnati, O.
 Clark-Mesker Co., 18511 Euclid Ave., Cleveland, Ohio.
 Cleveland Welding Machine Co., of The Hydraulic Steel Co., Cleveland, O.
 Conradson Machine Tool Co.—See Ryerson & Son.
 Davenport Mfg. Co., W. College St., Meadville, Pa.
 Dow Mfg. Co., 181 Adams St., Braintree, Mass.
 Flannery Co., P. J., 38 Whiting St., New Britain, Conn.

Everything is listed under the NOUN or principal word

MACHINES, Milling (Continued)

Fox Machine Co., 1811 W. Ganson St., Jackson, Mich.
 Gabrielson—See Meldrum-Gabrielson Corp.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Goolley & Edlund, Huntington St., Cortland, N. Y. "Briggs."
 Hendey Machine Co., 105 Summer St., Torrington, Conn.
 Ingersoll Milling Machine Co., Douglas & Willsoughby Sts., Rockford, Ill.
 Inman Co., H. A., Newark, N. Y.
 Kearney & Trecker Co. (West Allis), Milwaukee, Wis.
 Kempemith Mfg. Co. (West Allis), Milwaukee, Wis.
 Knight Machinery Co., W. B., 3920 W. Pine St., St. Louis, Mo.
 Kriesel—See Mill City Co.
 Le Blond Machine Tool Co., R. K., Madison & Edwards Rds., Cincinnati, O.
 Lucas Machine Tool Co., 533 E. 99th St., Cleveland, O. "Precision."
 McCrosky Tool Corp., Meadville, Pa.
 Meldrum-Gabrielson Corp., 107 N. Franklin St., Syracuse, N. Y. "Gabrielson."
 Mill City Co., Minneapolis, Minn. "Kriesel."
 Milwaukee—See Kearney & Trecker Co.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 Oesterlein Machine Co., 3850 Spring Grove Ave., Cincinnati, O. "Ohio."
 Ohio—See Oesterlein Machine Co.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Precision—See Lucas Machine Tool Co.
 Rockford Milling Machine Co., Harrison Ave. & 11th St. Rockford, Ill.
 Ryerson & Son, Joseph T., 2555 W. 16th St., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)
 Sloan & Chase Mfg. Co., 351 Sixth Ave., Newark, N. J.
 Staptoe Co., John, 2961 Colerain Ave., Cincinnati, O.
 Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 Toledo Milling Machine Co., Toledo, O.
 Thurston Mfg. Co., 140 Benedict St., Providence, R. I.
 United States Machine Tool Co., Richmond St. & McLean Ave., Cincinnati, O.
 Valley City Machine Works, 12-16 Campau Ave., N. W., Grand Rapids, Mich.
 Van Norman Machine Tool Co., 160 Willbraham Ave., Springfield, Mass.
 Whitney Mfr. Co., Hartford, Conn. (See page 227.)

MACHINES, MORTISING—See Machines, Wood Mortising

MACHINES, MOTOR DECARBONIZING—See Machines, Engine Decarbonizing

MACHINES, PICKING—See Machines, Hair Picking

MACHINES, REBORING—See Machines, Cylinder Reborings

MACHINES, RUBBING—See Machines, Body Rubbing

MACHINES, Screw

(Automatic)

Acme—See National Acme Co.
 Automatic Machine Co., 113 E. Washington Ave., Bridgeport, Conn.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Chicago Automatic Machine Co., 400-08 N. Oakley Blvd., Chicago, Ill.
 Cincinnati Automatic Machine Co., 2335 Buck St. (Oakley), Cincinnati, O.
 Cleveland Automatic Machine Co., 2369 Ashland Rd., Cleveland, O.
 Davenport Machine Tool Co., 187 Ames St., Rochester, N. Y.
 Greenfield Tap & Die Corp., Greenfield, Mass. (See page 855.)
 Gridley—See National Acme Co.
 Hartford Machine Screw Co., Hartford, Conn. (See page 741.)
 National Acme Co., Cleveland, O. "Acme," "Gridley." (See page 801.)
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Peerless Automatic Machine Co., 1970 W. 77th St., Cleveland, O.
 Potter & Johnston Machine Co., 1035 Newport Ave., Pawtucket, R. I.
 Smurr & Kamen Co., 328 N. Albany Ave., Chicago, Ill.
 Springfield Automatic Screw Machine Corp., Fitchburg, Mass.
 Townsend Mfg. Co., H. P., 8 Hoadley Pl., Hartford, Conn.
 Wood Turret Machine Co., S. Alabama St., Brazil, Ind.

MACHINES, Screw

(Head)

Acme Machine Tool Co., 4955 Spring Grove Ave., Cincinnati, O.
 Bardons & Oliver, 1133 W. Ninth St., Cleveland, O.
 Drees Machine Tool Co., 227-29 W. McMicken Ave., Cincinnati, O.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.
 Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, O.

MACHINES, Screw Driving

Hergl Mfg. Co., Bridgeport, Conn.
 McKay Co., Geo. C., 1046 St. Clair Ave., Cleveland, O.
 Reynolds Machine Co., N. West St., Massillon, Ohio.

MACHINES, SPRING STRAIGHTENING—See Machines, Leaf Spring Straightening

MACHINES, Spring Testing

Olsen Testing Machine Co., 500 N. 12th St., Philadelphia, Pa.

MACHINES, STITCHING—See Machines, Double Tread Tire Stitching

Everything is listed under the NOUN or principal word

MACHINES, Tapping

Anderson Die Machine Co., 544 Iranston Ave., Bridgeport, Conn.
 Baker Bros., Westlake Ave. & Post St., Toledo, O.
 Barnes Drill Co., 814-80 Chestnut St., Rockford, Ill.
 Burke Machine Tool Co., Sandusky St., Conneaut, O.
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 Marvin & Casler Co., 118 Roberts St., Canastota, N. Y.
 National Lathe Co., 11-15 W. Second St., Cincinnati, O.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 Rickert-Shafer Co., 618 W. 11th St., Erie, Pa.
 St. Louis Machine Tool Co., 923-22 Loughborough Ave., St. Louis, Mo.
 Workwell Engineering & Mfg. Co., 4145 W. Kinzie St., Chicago, Ill.

MACHINES, TENONING—See Machines, Wood Mortising**MACHINES, TESTING—See Machines, Metal Testing; also Machines, Spring Testing****MACHINES, Tire Bandage Wrapping**

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Pierce Wrapping Machine Co., 623 W. Jackson Blvd., Chicago, Ill.
 Rossman, Roy G., 1524 13th Ave., Seattle, Wash.
 T-W—See Terkelsen Machine Co.
 Terkelsen Machine Co., 326 A St., Boston, Mass. "T-W."
 Thrapp's Sons Co., John E., Trenton, N. J.

MACHINES, TIRE BUFFING—See Machines, Electric Tire Buffing**MACHINES, TIRE CHAIN REPAIR—See Tools, Tire Chain Repair****MACHINES, Tire Chain Washing**

Miles Mfg. Co., Newton, Ia.

MACHINES, TIRE DEFLATING—See Machines, Tube Deflating**MACHINES, Tire Inspecting**

(For spreading the shoe or opening it to permit more careful examination of the inner surface; for Tire Spreading Tools—See Tools, Tire Spreading)

Harkins Machine Co., T. L., 25 Union Sq. (Allston), Boston, Mass.
 Kehawke Mfg. Co., 1006 W. Lake St., Minneapolis, Minn.
 Ramsdell—See Russ Mfg. Co.
 Robertson, W. H., 223 N. Church St., Rockford, Ill.
 Russ Mfg. Co., W. 58th St. & Walworth Ave., Cleveland, O. "Ramsdell."
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 661.)

MACHINES, Tire Removing and Replacing.

Caldwell Mfg. Co., 408-10 N. Central Ave., Knoxville, Tenn. "Lightning."
 Lightning—See Caldwell Mfg. Co.
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 661.)

MACHINES, Tire Skiving

(For skiving the beads off all tires to permit their use as inner liners)

American Shoe Machinery & Tool Co., St. Louis, Mo.
 Maxwell Mfg. Co., 115 E. Murdock Ave., Wichita, Kans.
 P. S. M. Co., 3110-36 Snelling Ave., Minneapolis, Minn. "Progressive."
 (See page 931.)
 Progressive—See P. S. M. Co.

MACHINES, TIRE STITCHING—See Machines, Double Tread Tire**MACHINES, TOOTH CHAMFERING—See Machines, Gear Tooth Chamfering****MACHINES, Top Bow Dressing**

Buob & Scheu, 500-10 Webster Ave., Cincinnati, O. "Peerless."
 (See page 895.)
 Peerless—See Buob & Scheu.

MACHINES, TRANSMISSION BAND RIVETING FOR FORDS—See Machines, Brake Band Riveting**MACHINES, TREAD STITCHING—See Machines, Double Tread Tire****MACHINES, Tube Deflating and Valve Removing**

Barton Mfg. Co., 800 N. Saginaw St., Flint, Mich. "Jiffy."
 Jiffy—See Barton Mfg. Co.
 P. S. M. Co., 3110-36 Snelling Ave., Minneapolis, Minn. (See page 931.)

MACHINES, TUFTING—See Machines, Upholstery Tufting**MACHINES, Upholstery Button**

Handy—See Tufting Machine Supply Co.
 Reliable—See Tufting Machine Supply Co.
 Tufting Machine Supply Co., 406 E. Jefferson Ave., Detroit, Mich. "Handy," "Reliable."

MACHINES, Upholstery Tufting

Buser-Poston Tufting Machine Co., Chilli-otho, O.
 Novelty—See Tufting Machine Supply Co.
 Tufting Machine Supply Co., 406 E. Jefferson Ave., Detroit, Mich. "Novelty."

Everything is listed under the NOUN or principal word

MACHINES, Valve Grinding*(For Valve Grinding Tools—See Tools, Valve Grinding.)*

Arnold Electric Tool Co., New London, Conn.
 Black & Decker Mfg. Co., Towson Heights, Baltimore, Md.
 C & G—See Smith Co.
 Eclipse Valve Grinder Co., Oak St. at 20th, Kansas City, Mo.
 Smith Co., Arthur L., Monadnock Bldg., San Francisco, Cal., "C & G."
 United States Electrical Tool Co., Cincinnati, O. "U. S." (See page 347.)
 U. S.—See United States Electrical Tool Co.
 Warnock-Wirth Sales Co., 616 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Veltum & Clow Mfg. Co., Eugene, Ore.)
 Veltum & Clow Mfg. Co.—See Warnock-Wirth Sales Co.

MACHINES, Valve Seating and Facing*(For Valve Reseating and Facing Tools—See Tools, Valve Reseating and Facing.)*

B. F. S. Mfg. Co., 54 Hermon St., Worcester, Mass.
 Bean—See Liberty Metal Products Co.
 Bilt-Rite Equipment Co., 100 Beacon St., Worcester, Mass.
 Cedar Rapids Engineering Co., 902 N. 17th St., Cedar Rapids, Iowa. "Kwik-way."
 Foote-Burt Co., 4101 St. Clair Ave., Cleveland, O.
 Franklin Machine & Tool Co., Springfield, Mass. (See page 509.)
 Fry Mfg. Co., B. L., 2224 N. Ninth St., St. Louis, Mo.
 Kwik-Way—See Cedar Rapids Engineering Co.
 Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."
 Taylor & Fenn Co., 54-70 Arch St., Hartford, Conn.
 Turbine Air Tool Co., 710 Huron Rd., Cleveland, O.
 Worcester Electric Tool Co., 42 Southbridge St., Worcester, Mass.

MACHINES, VERTICAL BORING—See Machines, Boring**MACHINES, WELDING—See Machines, Autogenous Welding; also Machines, Electric Welding****MACHINES, WIRING — See Machines, Fender Wiring****MACHINES, Wood Bending**

Defiance Machine Works, 434 Perry St., Defiance, O.
 Fay & Egan Co., J. A., Front & John Sts., Cincinnati, O.

MACHINES, Wood Boring

American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.
 Bentel & Margedant Co., Hamilton, O.
 Cordesman, Meyer & Co., 55-57 Central Ave., Cincinnati, O.
 Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.

Defiance Machine Works, 434 Perry St., Defiance, O.

Fay & Egan Co., J. A., Front & John Sts., Cincinnati, O.

Jones Superior Machine Co., 1255-72 W. North Ave., Chicago, Ill.

Kane & Roach, Niagara & Shonnard Sts., Syracuse, N. Y.

Ober Mfg. Co., Chagrin Falls, O.

Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.

Power & Co., L., 20 S. 23d St., Philadelphia, Pa.

Prybil Machine Co., P., 512-24 W. 41st St., New York, N. Y.

Root Co., B. M., 30-36 Jefferson Ave., York, Pa.

Smith Machine Co., H. B., Smithville, N. J.

Valley City Machine Works, 12-16 Campau Ave., N. W., Grand Rapids, Mich.

MACHINES, Wood Mortising and Tenoning

American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.

Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.

Defiance Machine Works, 434 Perry St., Defiance, O.

Fay & Egan Co., J. A., Front & John Sts., Cincinnati, O.

New Britain Machine Co., Chestnut St., New Britain, Conn.

Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.

MACHINES, WRAPPING—See Machines, Tire Bandage Wrapping**MACHINISTS' CLAMPS—See Clamps, Machinists'****MACHINISTS' HAMMERS—See Hammers, Machinists'****MAGNET CHARGERS—See Chargers, Magneto Magnet****MAGNET REMAGNETIZERS—See Chargers, Magneto Magnet****MAGNETIC CHUCKS—See Chucks, Magnetic****MAGNETIC PUMP SYSTEMS—See Systems, Magnetic Pump Gasoline****MAGNETO ALIGNING FIXTURES FOR FORDS—See Fixtures, Magneto Aligning and Testing****MAGNETO BRUSHES—See Brushes, Magneto, Starter and Generator****MAGNETO COUPLINGS—See Couplings, Magnetos and Generators****MAGNETO COVERS—See Covers, Magneto****MAGNETO MAGNET CHARGERS—See Chargers, Magneto Magnet****MAGNETO METERS—See Meters, Magneto****MAGNETO METERS FOR FORDS—See Meters, Magneto**

Everything is listed under the NOUN or principal word

MAGNETO MOUNTING ATTACHMENTS

—See Attachments, Magneto Mounting

MAGNETO PARTS—See Parts, Magneto
Coil and Distributor**MAGNETO PLUG HOLDERS FOR FORDS**

—See Holders, Magneto Plug

MAGNETO TESTING FIXTURES FOR FORDS—See Fixtures, Magneto Aligning and Test**MAGNETO WINDINGS—See Windings****MAGNETO WRENCHES—See Wrenches,**
Magneto and Distributor**MAGNETOS, Ignition**American Bosch Magneto Corp. (Brightwood),
Springfield, Mass. "Bosch."American Swiss Magneto Co., 1682 Fernwood
Ave., Toledo, O.Apollo Magneto Co., 101 Grand St., Kingston,
N. Y.Berkshire Magneto Co., 70 West St., Pittsfield,
Mass.

Berling—See Ericsson Mfg. Co.

Bosch—See American Bosch Magneto Corp.
Eisemann Magneto Corp., 32 33d St.,
Brooklyn, N. Y. (See page 567.)Ericsson Mfg. Co., 1145 Military Rd., Buffalo,
N. Y. "Berling."

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell,
Mass. "Heco."K-W Ignition Co., 2900 Chester Ave., Clevel-
and, O.Kingston—See Kokomo Electric Co.
Kokomo Electric Co., 1450 N. Webster St.,
Kokomo, Ind. "Kingston."

Lauraine Magneto Co., Long Island City, N. Y.

Narco—See National Ignition Co.

National Coil Co., 221 N. Cedar St., Lansing,
Mich.National Ignition Co., Irvington-On-Hudson,
N. J. "Narco."Ohmer—See Recording & Computing Ma-
chines Co.Recording & Computing Machines Co., Day-
ton, O. "Ohmer."Remy Electric Co., 1623 E. Grand Blvd., De-
troit, Mich.

Rogers—See Vita Mfg. Co.

Simms Magneto Co., 277 N. Arlington Ave.,
East Orange, N. J.Scintilla Magneto Co., 225 W. 57th St.,
New York, N. Y. (Importers.)
(See page 567.)Splitdorf Electrical Co., 98 Warren St., New-
ark, N. J.

Standard Ignition Co., Elkhart, Ind.

Teagle Co., 1125 Oregon Ave., Cleveland, O.

Vita Mfg. Co., Williamson Bldg., Cleveland,
O. "Rogers."**MAGNETOS, Ignition, for Fords**American Bosch Magneto Corp. (Brightwood),
Springfield, Mass. "Bosch."Apollo Magneto Co., 101 Grand St., Kingston,
N. Y.Bosch—See American Bosch Magneto Corp.
Eisemann Magneto Corp., 32 33d St.,
Brooklyn, N. Y. (See page 567.)Splitdorf Electrical Co., 98 Warren St., New-
ark, N. J.**MAGNETOS, Tractor Ignition**American Bosch Magneto Corp. (Brightwood),
Springfield, Mass. "Bosch."American Swiss Magneto Co., 1682 Fernwood
Ave., Toledo, O. "Swiss."Apollo Magneto Co., 101 Grand St., Kingston,
N. Y.Berkshire Magneto Co., 70 West St., Pittsfield,
Mass.

Berling—See Ericsson Mfg. Co.

Bosch—See American Bosch Magneto Corp.
Eisemann Magneto Corp., 32 33d St.,
Brooklyn, N. Y. (See page 567.)Ericsson Mfg. Co., 1145 Military Rd., Buffalo,
N. Y. "Berling."K-W Ignition Co., 2900 Chester Ave., Clevel-
and, O.

Lauraine Magneto Co., Long Island City, N. Y.

Motsinger Device Mfg. Co., Indianapolis, Ind.
National Coil Co., 221 N. Cedar St., Lansing,
Mich.Ohmer—See Recording & Computing Ma-
chines Co.Recording & Computing Machines Co., Day-
ton, O. "Ohmer."Remy Electric Co., 1623 E. Grand Blvd., De-
troit, Mich.Scintilla Magneto Co., 225 W. 57th St.,
New York, N. Y. (Importers.)
(See page 567.)Simms Magneto Co., 277 N. Arlington Ave.,
East Orange, N. J.Splitdorf Electrical Co., 98 Warren St., New-
ark, N. J.

Standard Ignition Co., Elkhart, Ind.

Swiss—See American Swiss Magneto Co.

Teagle Co., 1125 Oregon Ave., Cleveland, O.

MAGNETS, Permanent

(For Magnets)

Esterline-Angus Co., 227 E. South St., In-
dianapolis, Ind.Lindenberg Steel Co., 90 West St., New York,
N. Y. (Importers.)

Shunk Mfg. Co., Bucyrus, O.

Stromberg-Carlson Telephone Mfg. Co., 1050
University Ave., Rochester, N. Y.**MAILING BAGS—See Bags, Shipping****MAIN BEARING JIGS—See Jigs, Main Bear-**
ing and Connecting Rod Babbittings**MAIN BEARING REAMERS FOR FORDS—**
See Reamers, Main Bearing and Connect-
ing Rod**MALLEABLE CASTINGS—See Castings,**
Malleable Iron**MALLETS, BRASS AND COPPER—See**
Hammers, Soft Metal**MALLETS, Rubber**(For use in place of a metal hammer on finished
surfaces)Thermoid Rubber Co., Trenton, N. J.
(See page 531.)**MANDREL CLAMPS—See Clamps, Tube**
Splicing Mandrel

Everything is listed under the NOUN or principal word

SCINTILLA

MAGNETOS

Manufactured in Switzerland and employing a new principle of construction—magnet rotating, winding stationary—Scintilla Magnetos are especially built to meet the severe conditions of tractors, trucks, motor boats and high

grade automobiles—where long, uninterrupted service is so essential.

Large stock is carried in New York. Our descriptive data gives the structural details of this remarkable Swiss-made ignition system.

SCINTILLA MAGNETO CO., Inc.

225 West 57th Street

NEW YORK CITY



The white hot
spark you want
when you want
it—and every
time!

THE EISEMANN MAGNETO CORP'N

32 Thirty-Third Street

Detroit

BROOKLYN, N. Y.

Chicago



The AUTOLOG is filling a long-felt want of Automobile owners for some simple method of keeping an accurate check on Gas and Oil consumption and car performance in miles per gallon.

It is a handsomely nickel-plated instrument, with printed record cards, only two and one-half inches in diameter, which clamps on the spoke of any steering wheel.

AUTOLOGS sell at retail for \$2.00 and are making an instant appeal to the motoring public wherever introduced.

DEALERS—Write for folder or send ONE DOLLAR for sample instrument.

IF YOU DON'T INVESTIGATE WE BOTH LOSE

AUTOLOG COMPANY

1632 South Grand Avenue, Los Angeles, Calif.

The Cost of Selling Declines as Distribution Widens

Every manufacturer knows that a lower ratio of selling cost is the result of increased distribution.

And most of them know, through their own experience, that MOTOR AGE, by virtue of its position as service-and-sales counselor for thousands of dealers, garagemen and service managers, wields a trade influence that is vital to the distributive plans of any automotive producer who seeks to cover his field thoroughly and profitably.

The best proof of this is in the advertising section of MOTOR AGE itself, where the vast majority of successful manufacturers are regularly represented.

239 W. 39th St.

New York

MOTOR AGE

Mallers Bldg.

Chicago

Please mention The Automobile Trade Directory

MANDRELS, Expanding

Alert Tool Co., 237 N. Sixth St., Philadelphia, Pa.
 Brubaker & Bros., W. L., 50 Church St., New York, N. Y.
 Champion—See Western Tool & Mfg. Co.
 Eastern Tube & Tool Co., 594 Johnson Ave., Brooklyn, N. Y. "Ettco."
 Ettco—See Eastern Tube & Tool Co.
 Le Count, Wm. G., Merritt St., South Norwalk, Conn.
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 Nicholson & Co., W. H., 13 Oregon St., Wilkes-Barre, Pa.
 Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
 Western Tool & Mfg. Co., Springfield, O. "Champion."

MANDRELS, Inner Tube

Carl's Sons, Chas. W., Coles St., Trenton, N. J.
 Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
 New Haven Sherardizing Co., 868 Windsor St., Hartford, Conn.

MANGANESE STEEL—See Steel, Manganese

MANIFOLD HEATERS—See Heaters, Mixture

MANIFOLD LOCKS FOR FORDS—See Locks, Manifold

MANIFOLD REGISTERS—See Registers, Autographic and Manifold

MANIFOLDS, Intake and Exhaust

(Brazed and Welded Manifolds. For Cast Manifolds—See Castings)

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y.
 American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich. (See page 913.)
 American Tube Bending Co., 5-9 Lawrence St., New Haven, Conn.
 American Tube Co., 8704 S. Rockwell St., Chicago, Ill.
 Armstrong Co., J. C., Beloit, Wis.
 Bettoher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O.
 Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.
 Deposited Metal Products Co., 65 Bridge St., Newark, N. J.
 Detroit Tube Products Co., 304 S. Junction Ave., Detroit, Mich.
 Great Scott Vaporizer Co., Norris Bldg., Grand Rapids, Mich.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Kent Co., F. C., Irvington, N. J. (See page 595.)
 Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 Michigan Steel Tube Products Co., Buffalo St., Detroit, Mich. (See page 913.)
 Monarch Foundry Co., Detroit, Mich.
 New Jersey Tube Co., Newark, N. J.
 Ohio Heating & Pipe Bending Co., 1061-63 W. 11th St., Cleveland, O.
 Pressed & Welded Steel Products Co., 326 Boulevard, Long Island City, N. Y.

Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
 Standard Metalwork Co., 92-108 Prospect St., Thompsonville, Conn.
 Standard Parts Co., Cleveland, O. (See pages 85, 119, 701 and 798.)
 Standard Tool & Mfg. Co., 512-24 E. Lafayette Blvd., Detroit, Mich. (See page 579.)
 Tubular Products Co., 53 Railroad Ave., Southington, Conn.
 United Wire & Supply Co., 1497 Elmwood Ave., Providence, R. I.
 Whittier Co., 2415 S. Michigan Ave., Chicago, Ill. "Wilmo."
 Wilmo—See Whittier Co.
 Wolverine Tube Co., Detroit, Mich. (See page 923.)

MANIFOLDS, Intake, for Fords

(Special intake manifolds with exhaust gas or hot water jacket; see also Heaters, Mixture for Kerosene Carburetors—See Carburetors, Kerosene)

American Auto Products Co., 240-44 S. Broadway, Denver, Colo. "J. B. J."
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3-A-Co."
 American Manifold Co., Water St., Jackson, Mich. "Sure Start."
 Anco—See Anderson Co.
 Anderson Co., 232 S. St. Joseph St., South Bend, Ind. "Anco."
 B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill.
 Benjamin Motor Products Co., Dearborn, Mich.
 Burn Oil Device Co., 129 N. Jefferson St., Peoria, Ill.
 Cooper Foundry Co., Atchison, Kans. "Eureka."
 Coppock, A. J., 123 Euclid Ave., W., Detroit, Mich.
 Dallas Auto Device Co., 1018 Elm St., Dallas, Tex. "Gasaver."
 Eureka—See Cooper Foundry Co.
 Frankfort Carburetor Co., Frankfort, Ind.
 Gasaver—See Dallas Auto Device Co.
 Great Scott Vaporizer Co., Norris Bldg., Grand Rapids, Mich.
 Holley Carburetor Co., Vancouver Ave. & E. M. R. R., Detroit, Mich.
 J. B. J.—See American Auto Products Co.
 J. E. S.—See Kerosene Motor Appliance Co.
 Kerosene Motor Appliance Co., 245 W. 56th St., New York. "J. E. S."
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 Ospeco—See Michigan Auto-Products Co.
 Star-K—See Stark-Inland Machine Works.
 Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."
 Sunderland Corp., Newburgh, N. Y. (See page 191.)
 Sure-Start—See American Manifold Co.
 3-A-Co—See American Automobile Accessories Co.
 Whittier Co., 2415 S. Michigan Ave., Chicago, Ill. "Wilmo."
 Wilmo—See Whittier Co.
 Wolverine Tube Co., 1411-51 Central Ave., Detroit, Mich. (See page 923.)

MANIFOLDS, Wiring.

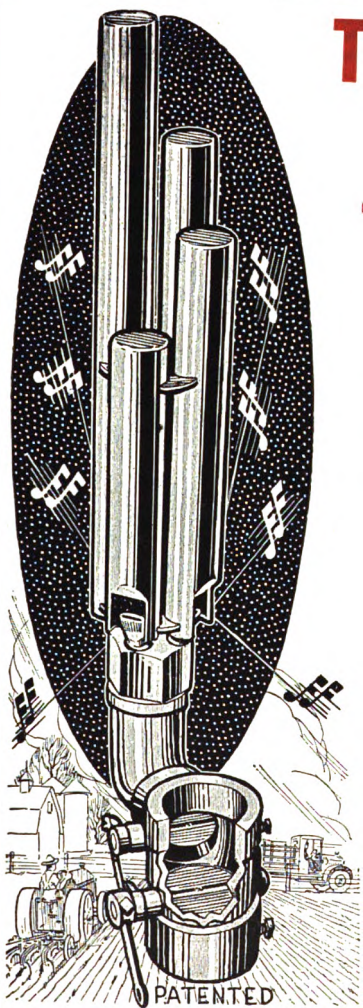
Kant Kut Tube Products Co., 42 W. South St., Indianapolis, Ind.

MANUAL ENGINE STARTERS—See Starters, Manual or Pedal or Lever Engine

Everything is listed under the NOUN or principal word

THE **FULTON** LINE

The Signal that WINS The Right of Way



OVER 250,000 of these melodious chime signals are now in use in all parts of the world. They WIN the right of way by their pleasing tone, a most courteous warning of the road that gives desirable distinction to any car. Easily attached to exhaust pipe. Will last a lifetime and give no trouble.

The **AERMORE** Exhaust Horn

Also popular for trucks and tractors. Useful in signaling from the field or while threshing, wood sawing, silo filling, to signal to the crew, etc. A size to fit any motor.

- No. 0—17-inch Aermore outfit complete with valve for cars of 40 h.p. or over...\$12.00
 No. 1—15-inch Aermore outfit complete for cars of 30 h.p..... 10.00
 No. 2—13-inch Aermore outfit complete for cars of 25 h.p..... 9.00
 No. 3—11-inch Aermore outfit complete for Fords and other light cars\$8.00

Add 50c to above prices west of Rocky Mountains.

Price of Style "G" valve when ordered separate, all sizes.....\$2.00

In ordering, give outside diameter of exhaust pipe between muffler and engine. Dealers, ask your jobber. If he cannot supply you, write direct, giving jobber's name.

MANUFACTURED BY

THE FULTON COMPANY

75th & National Aves.

MILWAUKEE, WISCONSIN

THE FAMOUS EKLIPS SPARK PLUGS

leak and soot-proof, sure spark, very durable.

THE SPECIAL EKLIPS GIANT

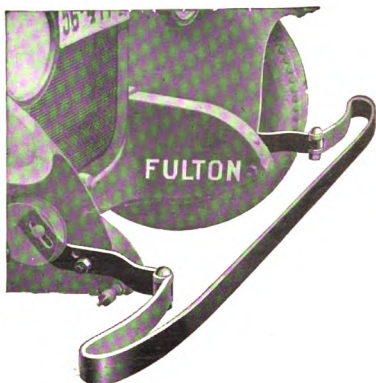
Suitable for heavy trucks and high-power cars.

\$1.00 Each

Medium Quality Eklips "C" only 75c

THE **FULTON** LINE

The **FULTON** UNIVERSAL Spring Bumper



Can be fitted in 30 minutes to any car of the extended frame type. Offset in brackets accommodates any width frame by merely transposing the brackets. The special hinge gives this bumper more resiliency, and makes it absorb shock without damage to bumper or car. Material used in these bumpers is specially treated spring steel $2\frac{1}{4} \times 3\frac{1}{8}$ stock.

No clamps or fittings to catch or rattle or get out of line. 60-inch bar in front and 66-inch bar for the rear, thus giving full protection to fenders and entire rear end. Bumper folds into small package, thus saving freight charges.

Stock Number and Description	List
10-N 60" bar, black and nickel finish.....	\$14.00
11-B 60" bar, black finish	12.00
26-N 66" bar, black and nickel finish.....	15.00
27-B 66" bar, black finish	13.00

The **FULTON** FULFLEX Spring Bumper

With Universal Brackets

For front and rear of cars with extended frame.

Made of same heavy high-grade spring steel as used in the single bar. Top bar extends across entire front of Bumper and is supplemented by the second bar. Brackets are the same as used in connection with the single bar and finish is also the same.

Stock Description	Price
100N 60" Fulflex Spring Bar Nickel Universal Bracket, Front.....	\$20.00
110B 60" Fulflex Spring Bar Black Universal Bracket, Front.....	18.00
160N 66" Fulflex Spring Bar Nickel Universal Bracket, Rear.....	21.00
170B 66" Fulflex Spring Bar Black Universal Bracket, Rear.....	19.00

The **FULTON** FULFLEX Spring Bumper

With Standard Rear Brackets

For rear of cars with Cantilever Springs and other cars requiring especially long arms.

Stock Description	Price
260N 66" Fulflex Spring Bar Nickel Standard Rear Bracket.....	\$21.00
270B 66" Fulflex Spring Bar Black Standard Rear Bracket.....	19.00

Manufactured by

THE FULTON CO.

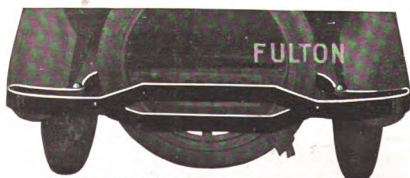
75th & National Aves. MILWAUKEE, WIS.



Fulton Spring Bumper for Rear



Fulton Fulflex Spring Bumper, Front



Fulton Fulflex Spring Bumper, Rear

THE **FULTON** LINE **MONROE SELF OILING PUMPS**

Most Tire Pumps are discarded before they wear out. The life of the average pump is quite short, because the pump lasts only until its leather washer has dried out and cracked. With every stroke of the piston the patented Monroe Self Oiling device feeds lubricant onto the washer of the Monroe Pump. This not only lengthens the life of the washer but lubricates the plunger path as well. A ball check valve prevents return of air into the pump.

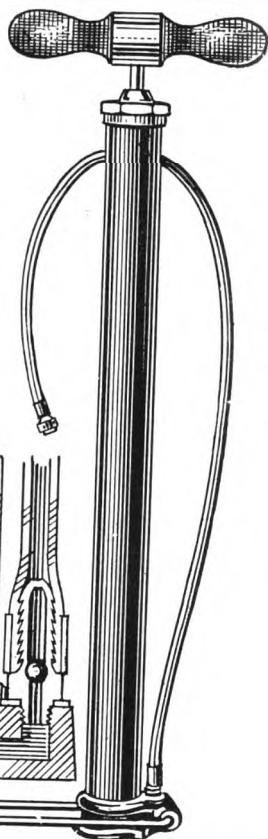
Top cap and ferrule on handle bright nickelled.

No. 10—Monroe Self Oiling Pump, 1¼ in. cylinder, 21½ in. long, black enamel, folding base, nickel plated. Price, \$2.75.

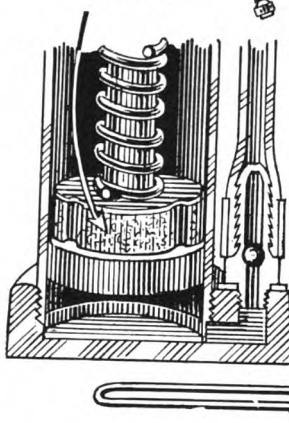
No. 15—Monroe Self-Oiling Pump, 1½ in. cylinder, 21½ in. long, black enamel, folding base, nickel plated. Price, \$3.00.

No. 350—A good pump with which to meet competition—without self-oiling features, 20 in. over all, black enamel. Packed loose, 50 in box. Price, \$2.00.

Jobbers, get our proposition on these pumps; also on Ford Brake Shoes and Spot Light Brackets.



**PATENTED
SELF OILING
WASHER**



FORD BRAKE SHOE

Cast to fit any Ford. Assembled as shown. Packed 25 in a case. Also in individual cartons, a pair to a carton. Ask for prices.

MANUFACTURED BY

**MONROE
AUTO EQUIPMENT
MFG. CO.
MONROE, MICHIGAN**

Exclusive Sales Representatives

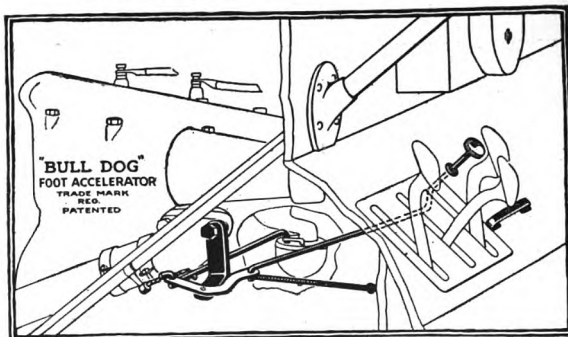
THE FULTON CO 75th & National Aves.
MILWAUKEE, WIS.



THE **FULTON** LINE

"Bull Dog" Foot Accelerator

Gives Fords the same sensible, easy foot control of speed as that of highest priced cars. Prevents accidents due to killing the engine when driver becomes confused.



Special foot rest provided, aids in maintaining uniform speed, even on roughest roads. Easy to install and requires no further attention. Absolutely correct in design, substantial, simple and practically unbreakable. Retail price, complete, \$1.50.



"Bull Dog" Running Board Support

We do not enter the field with our RUNNING BOARD SUPPORT with a view of competition in price, but are offering the trade something absolutely new and individual—built neat and durable with that same view of satisfaction that characterizes the rest of the "BULL DOG" Products.

The "BULL DOG" RUNNING BOARD SUPPORT is so constructed as to truss itself by attaching only to running boards and hangers—a very important feature. Prevents vibration, racking of fenders, and securely holds the running boards under any load.

No clamps to work loose—and will not interfere with the removal of the rear axle. Its construction is the strongest ever offered in an item of this kind, 1" T iron being used. Price \$2.25.

Manufactured by

THE W. H. THOMAS MFG. CO., Spencer, Iowa

No. 20 Handy Garage Shear

An every-day necessity in any garage or repair shop.

An all steel shear. Base is one piece Tee bar to which is secured the stationery cutting knife, making the most rigid construction. Knives are high grade tool steel $7\frac{1}{2}$ inches long, finely tempered and ground, and so arranged as to form a continuous cutting shear for handling sheet material any width or length. Handiest bench shear for cutting brake lining, shim stock, sheet packing, gaskets, light sheet steel or other metals, wiring, battery plates, etc.

Size of base $7\frac{1}{2} \times 2\frac{1}{2}$ inches. Length of shear over all 22 in. Capacity 16 gauge sheet iron or any ordinary size brake lining. Weight 8 lbs. Price \$5.50.



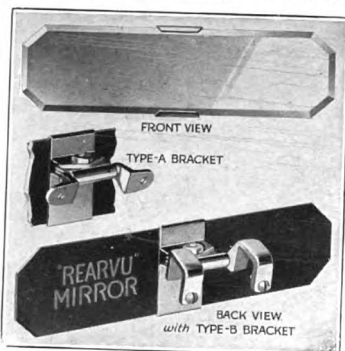
Manufactured By **SIMONSEN IRON WORKS,**
Sioux Rapids, Iowa, U. S. A.

Exclusive Sales Representatives:

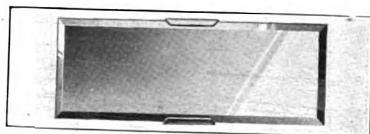
THE FULTON CO. 75th and National Avenue
MILWAUKEE, WIS., U. S.

THE FULTON LINE

Rear-Vu Mirror



10 Inch Octagon Type



8 Inch Square Type

Attached to the windshield of the open car or the frame of the enclosed body. Easily adjusted to the left, right, or up and down. Does not rattle or work loose. Within easy access of the driver's eye and reflects to him all that is taking place in the rear. Type A for enclosed cars, Type B for open cars. Eight, ten, twenty, thirty-inch lengths. All 2 inches wide. All brackets of brass, nickel plated. Packed 25 in a case to jobbers.

Stock No.	Description	List
10A	10 in. x 2 3/4 in. Octagon Mirror, Type A...	\$3.50
10B	10 in. x 2 3/4 in. Octagon Mirror, Type B...	3.50
8A	8 in. x 2 3/4 in. Square End Mirror, Type A...	2.50
8B	8 in. x 2 3/4 in. Square End Mirror, Type B...	2.50

Also manufacturers of the "Automotive" windshield wings. Write for prices.

Manufactured by

AUTOMOTIVE ACCESSORIES, Inc., Kokomo, Ind.

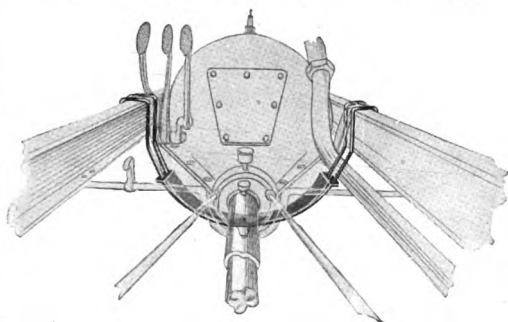
Victory Motor Support for Fords

A hammock-shaped, pressed-steel plate fitting close under the Ford motor, and attached to main chassis frame by the means of four hookbolts. (See cut.)

For broken crankcase arms, the Victory is a quick and permanent repair. A positive time and labor saver that should not be confused with any temporary repair, as repairs made with the Victory are permanent.

As a preventive, the Victory Motors Support should be on every Ford. Not only is this a repair, but if installed on any Ford, will prevent breaking of crankcase arms, and by relieving the constant strain on these arm fastenings will also prevent many of the nasty oil leaks which occur in many Fords.

Easily and quickly installed. No changes to make on the Ford. No bolts or other parts to remove. No holes to drill. Anyone can install a Victory in less than ten minutes with a common monkey wrench.



Manufactured by

SIMONSEN IRON WORKS

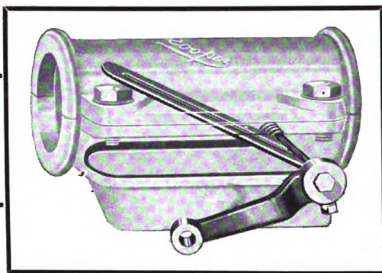
Sioux Rapids, Ia., U. S. A.

EXCLUSIVE SALES REPRESENTATIVES

THE FULTON CO.

75th & National Avenues
Milwaukee, Wis., U. S. A.

Cooper "SPECIAL" CUTOUT



PATENTED

More PEP--More POWER Less CARBON TROUBLE

The large valve opening of the Cooper Special Cut Out relieves all back pressure of muffler. Therefore, gives the motor greater freedom, more pep and power. Free exit is also made for explosions, adding to their force in loosening and blowing out carbon. Every sound of motor can be heard. Detects missing spark plug, weak cylinder or any impending motor trouble.

Strongest Possible Construction

Copper Special Cut Out Valve, spring and axle, are made of heavy gray metal and steel. Spring holds heavy valve firmly. It cannot rattle or chatter. Will not clog. Spring and axle not affected by heat or carbon. The Cut Out will outlast the car.

A great boon to dealers because of their satisfactory service. Installed **without cutting exhaust pipe in two**. Auto owners are delighted with them.

Sizes	With Pedal No. 3	With Pedals Nos. 4 or 5
1½ (Ford size)	\$3.00	\$3.50
1½, 1¾, 1⅞	3.50	4.00
2, 2¼	4.00	4.50
2¼, 2½, 2⅝, 2¾	4.50	5.00
2¾, 2⅞, 3	5.50	6.00

If dealer cannot supply you, write direct. Dealers, ask your jobber.

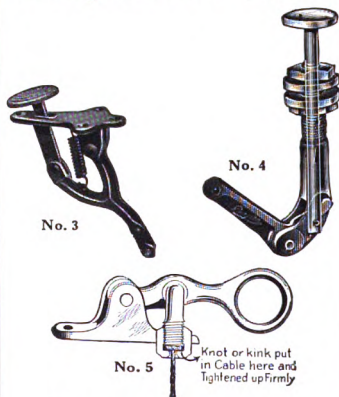
Manufactured by
COOPER MFG. CO.
Marshalltown, Ia.

Exclusive Sales Representatives

THE FULTON CO.

75th and National Aves., Milwaukee, Wis., U. S. A.

3 Styles of Pedals



Cooper Screw-Type Cut Out for Buicks

Easily attached. Made of malleable iron; indestructible; cannot rattle, squeak or loosen. Prices, valve only \$3.00. With pedal No. 3, \$3.50. With Pedal No. 4 or 5, \$4.00.



Pat. Applied For

MANUFACTURERS AGENTS

(Covering only Manufacturing Agents who advertise in this publication)

- Ansch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (See page 247.)
- Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (See page 337.)
- Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (See page 945.)
- Clucker & Hixson Co., 47 Murray St., New York, N. Y. (See page 49.)
- Coful Auto Parts Co., National City Bank Bldg., Cleveland, O. (See page 509.)
- Denton & Anderson, Engineers' Bldg., Cleveland, O. (See page 911.)
- Eckhouse, Horace H., 1834 Broadway, New York, N. Y. (See page 651.)
- Faw Co., J. H., 27 Warren St., New York, N. Y. (See page 429.)
- Fulton-Houston Co., 1146 Michigan Blvd., Chicago, Ill. (See page 415.)
- Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (See pages 133 to 138B.)
- Moore-Wright Co., 1400 Broadway, New York, N. Y. (See page 185.)
- Motorcraft Engineering Co., 2270 Franklin St., Detroit, Mich. (See page 731.)
- Reinhard Bros. Co., 11-13 S. Ninth St., Minneapolis, Minn. (See page 495.)
- Staff, J. Wadsworth, 122 S. Michigan Blvd., Chicago, Ill. (See page 701.)
- Standard Ignition Co., 320 E. Fordham Rd., New York, N. Y. (See page 367.)
- Universal Auto Parts Co., 268 Martilla St., Portland, Ore. (See page 167.)
- Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (See pages 769 to 774.)

MAPS, Road

- Automobile Blue Books Corporation, The, 243 W. 39th St., New York, N. Y.
- Clason Map Co., 1515 Tremont Pl., Denver, Colo.
- Iowa Map Co., Observation Bldg., Des Moines, Ia.
- King, Sydney J., 626-36 S. Clark St., Chicago, Ill.
- Mendenhall, C. S., 406 Elm St., Cincinnati, O.
- National Mileometer Co., Marquette Bldg., Detroit, Mich.
- Scarborough Motor Guide Co., 33 E. Georgia St., Indianapolis, Ind.
- Tib Automobile Route Book Co., Shukart Bldg., Kansas City, Mo.
- Walker Lithograph & Publishing Co., 400 Newbury St., Boston, Mass.

MARKET REPORTS—See Reports, Used Car Market

MASTER VIBRATORS—See Coils, Spark

MASTER VIBRATORS FOR FORDS—See Vibrators, Master

MAT BINDING—See Binding, Mat and Carpet

MATS, Carpet

(See also Carpet)

Hopewell Bros., Watertown, Mass. (See page 905.)

MATS, Cocoa

(Cocoa or Fiber Mats for car floors; for Cocoa Running Board Mats—See Mats, Running Board)

- Bantam—See Tyler Mfg. Co.
- Darragh, Small & Co., 171 Water St., New York, N. Y.
- Glenfield—See Wehn Son & Co.
- Heywood-Wakefield Co., Water St., Wakefield, Mass.
- Kempf & Son, Wm. F., 1627-33 N. Fourth St., Philadelphia, Pa.
- Koko Mat Co.—See Mooers-Wright Co.
- McCabe & Bro., Benj., 37 E. 18th St., New York, N. Y.
- Mat Co., 495 Western Ave., Muskegon, Mich.
- Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for Koko Mat Co., New York, N. Y.) (See page 185.)
- Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Bantam."
- Rancocas Mills, Trenton, N. J.
- Wehn Son & Co., Geo., Glenfield, Pa. "Glenfield."
- Wisconsin Mat Co., 392-94 Sixth St., Milwaukee, Wis.

MATS, Floor Board, for Fords

(Molded or formed rubber, leather or metal mats; See also Carpet, Coach)

- Bantam—See Tyler Mfg. Co.
- Federal Rubber Co., (Cudahy), Milwaukee, Wis.
- Fernald Mfg. Co., North East, Pa. (See page 75.)
- General Rubber Goods Co., Cleveland, Ohio.
- Goliath—See General Rubber Goods Co.
- Goodrich Co., B. F., 8 Main St., Akron, O.
- Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Goliath Mats.) (See page 179.)
- Hercules—See Ray Fabric Mills.
- Mayo & Co., F. A., Boston, Mass.
- Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill.
- Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
- Powers Mfg. Co., Waterloo, Iowa. (See page 530.)
- Ray Fabric Mills, Franklin, Mass. "Hercules."
- Rub-Tex Products, Inc., Indianapolis, Ind.
- Spiro Mfg. Co., C., 65-73 E. 131st St., New York, N. Y. "Uniq."
- Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Bantam."
- Uniq—See Spiro Mfg. Co.
- Wisconsin Mat Co., 392-94 Sixth St., Milwaukee, Wis.

MATS, Leather

- H. & C.—See Winship, W. W.
- Leathersteel Products Co., 73 Long Wharf, Boston, Mass.
- Winship, W. W., 71 Summer St., Boston, Mass. "H. & C."

MATS, LINOLEUM—See Linoleum**MATS, Rubber**

(Rubber Mats and Matting for car floors or running boards)

- Bickett Rubber Products Corp., 600 S. First St., Watertown, Wis.
- Boston Heating Co., 34 Linden Park St., Boston, Mass.
- Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass. "Lenox," "Tiger."

Everything is listed under the NOUN or principal word

MATS, Rubber (Continued)

Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.
 Cambridge Rubber Co., 740-60 Main St., Cambridge, Mass. "Camco."
 Camco—See Cambridge Rubber Co.
 Cincinnati Rubber Mfg. Co., Cincinnati, O. (See page 475.)
 Combination Rubber Mfg. Co., Bloomfield, N. J.
 Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga. "Holdfast."
 Empire Tire & Rubber Co., Mulberry St. & Cuntion Ave., Trenton, N. J.
 Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
 Federal Rubber Co., (Cudahy), Milwaukee, Wis.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
 Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
 Holdfast—See Diamond Holdfast Rubber Co.
 Home Tire Co., Trenton, N. J.
 Lenox—See Boston Woven Hose & Rubber Co.
 Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
 Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill.
 Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.
 Milford Rubber Works, Milford, Ill.
 Monarch Linoleum & Rug Co., Bulletin Bldg., Philadelphia, Pa.
 Monarch Rubber & Oil Cloth Co., Drexel Bldg., Philadelphia, Pa.
 New York Belting & Packing Co., 91 Chambers St., New York, N. Y.
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Republic Rubber Co., Albert St., Youngstown, O.
 Thermoid Rubber Co., Trenton, N. J. (See page 531.)
 Tiger—See Boston Woven Hose & Rubber Co.
 United States Rubber Co., 1790 Broadway, New York, N. Y.
 Victor Rubber Co., Springfield, O. (See page 872.)
 Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

MATS, Running Board
 (Small mats for attaching to running boards for cleaning feet when entering car; for running board plate—See Plates, Step)

Allen—See Cushion Pedal Co.
 Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Automat."
 Automat—See Auburn Leather Goods Co.
 Bradsto Appliances, Inc., 65 Main St., Buffalo, N. Y. "Standard."
 Chaco—See Chamberlain, B. F.
 Chamberlain, B. F., 184 Summer St., Boston, Mass. "Chaco."
 Continental Motor Equipment Co., 18 Broadway, New York, N. Y.
 Cushion Pedal Co., 297 San Fernando Rd., Los Angeles, Cal. "Allen."
 (See page 441.)
 Darragh, Small & Co., 177 Water St., New York, N. Y.
 E-Z-Way—See La Vietes Co.
 Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.

Ever-Ready—See Wisconsin Mat Co.
 Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y.
 Fernald Mfg. Co., North East, Pa. (See page 75.)
 General Rubber Goods Co., Cleveland, O. "Goliath."
 Getman Leather Co., 2913 Prairie Ave., Chicago, Ill. "Marnot."
 Goliath—See General Rubber Goods Co.
 Heywood-Wakefield Co., Water St., Wakefield, Mass. "Slide-On," "Holdfast," "Safetread," "Slip-Not."
 Holdfast—See Heywood-Wakefield Co.
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Goliath Mats.) (See page 179.)
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Distributors East of the Mississippi River for Standley Adjusters.) (See page 138B.)
 Keystone Wire Matting Co., 607-09 Seventh St., Beaver Falls, Pa.
 Koko Mat Co.—See Mooers-Wright Co.
 La Vietes Co., Geo. E., 218 State St., New Haven, Conn. "E-Z-Way." (See page 579.)
 Leathersteel Products Co., 73 Long Wharf, Boston, Mass.
 Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio.
 Marnot—See Getman Leather Co.
 Mat Co., 495 Western Ave., Muskegon, Mich. "Never-Slip."
 Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
 Mikesell Brothers Company, 156 N. La Salle St., Chicago, Ill. "Wabash." (See page 530.)
 Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for Koko Mat Co., New York, N. Y.) (See page 185.)
 Mosler & Co., A. R., Mt. Vernon, N. Y.
 Never-Slip—See Mat Co.
 Paragon—See United Mat Mfg. Co.
 Rich Mfg. Co., 69-71 Greene St., New York, N. Y. "Rico."
 Rico—See Rich Mfg. Co.
 Ronuk—See Mikesell Brothers Co.
 Roos, Wm. A., 109 W. 225th St., New York, N. Y.
 Rubber Specialty Co., 27 Cornhill St., Boston, Mass.
 Rudco—See Ruddiman Co.
 Ruddiman Co., F. G., Ionia, Mich. "Rudco."
 Safetread—See Heywood-Wakefield Co.
 Sanisafe—See United Mat Mfg. Co.
 Sanitary Wire Door Mat Co., 413 S. Lincoln St., Chicago, Ill.
 Sewell-Garding Mfg. Co., 1120 Broadway, Denver, Colo.
 Slide-On—See Heywood-Wakefield Co.
 Slip-Not—See Heywood-Wakefield Co.
 Staff, J. Wadsworth, 122 S. Michigan Ave., Chicago, Ill. (Dealers.) (See page 701.)
 Standard—See Bradsto Appliances, Inc.
 Standley Skid Chain Co., Boone, Iowa. (See page 138B.)
 Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill.
 Sure-Step Auto Mat Co., 12-14 Canal St., Boston, Mass.
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass. "Tymco."
 Tymco—See Tyler Mfg. Co.
 United Mat Mfg. Co., 147 Calor Ave., Jersey City, N. J. "Paragon," "Sanisafe." (See page 577.)
 Wabash—See Mikesell Brothers Company.

Everything is listed under the NOUN or principal word

Paragon Mats

*make the step safe
and keep the car interior spotless*

Paragon Mats are of novel construction, and the most substantial and at the same time ornamental mats made for the purpose of rendering the running board or car step safe and keeping the interior of the open or closed car spotless and sanitary.

These new mats consist of strong, polished aluminum frames holding alternate rows of solid non-slip rubber blocks and genuine Tampico bristle brushes so arranged that all dirt falls between and through the rows, out of the way. Running boards and steps equipped with Paragon mats are safer in winter and in rainy weather, and an ornament to the car.

Paragon Mats come in a variety of models; the one shown here is our style B Standard Running Board Mat. Style A is a complete individual oval step designed to be mounted at the side of the frame. Style C is a complete square step with edges upturned on three sides.

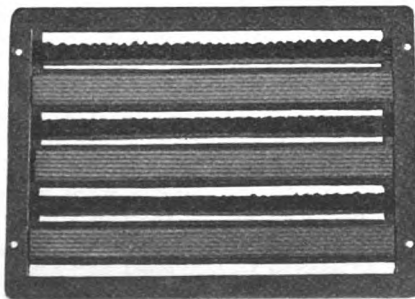
***Jobbers and Dealers—send for our
illustrated price list and discounts.***

UNITED MAT MFG. COMPANY

147 Cator Avenue

JERSEY CITY, N. J.

Paragon Mats are widely advertised in trade and motorist's publications and fill a general and acknowledged need. They practically sell on sight wherever they are shown and make the quickest selling accessory you can take on.



Every Paragon Mat sold to one motorist sells more to others, and after selling the Mat you keep on selling re-fill brushes and non-slip rubber blocks. Write and get all the details today.

A New Accessory that Sells on Sight.

Please mention The Automobile Trade Directory

MATS, Running Board (Continued)

Wear Proof Mat Co., 500 S. Peoria St., Chicago, Ill.

Wisconsin Mat Co., 392-94 Sixth St., Milwaukee, Wis. "Ever-Ready."

"X" Laboratories, 25 W. 45th St., New York, N. Y.

MATS, STEP—See Mats, Running Board

MATTING, Aluminum

(Stamped aluminum matting for covering floor or running boards)

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.

Erdle Perforating Co., 171 York St., Rochester, N. Y. "Pyrama."
(See page 579.)

Konigsow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.

Metal Stamping Co., Long Island City, N. Y. (See page 168.)

Pyramid—See Spiro Mfg. Co.

Pyrama—See Erdle Perforating Co.

Richards & Co., 200-06 Causeway St., Boston, Mass. "Rico."

Rico—See Richards & Co.

Spiro Mfg. Co., C., 63-72 E. 131st St., New York, N. Y. "Pyramid."

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill.

MATTING, LINOLEUM—See Linoleum

MATTING, RUBBER—See Mats, Rubber

MATTRESSES, Pneumatic

Atlantic-Pacific Mfg. Corp., 129 Atlantic Ave., Brooklyn, N. Y. "Perfection."
(See page 579.)

Metropolitan Air Goods Co., Marble St., Athol, Mass.

Perfection—See Atlantic-Pacific Mfg. Corp.

MEASURES, METAL—See Funnels and Measures, Metal

MEASURING MACHINES—See Machines, Leather Measuring

MECHANICAL BELLS—See Bells, Mechanical

MECHANICAL CLEANERS—See Cleaners, Glass Wind Shield

MECHANICAL ENGINE STARTERS FOR FORDS—See Starters, Mechanical or Spring Engine

MECHANICAL HORNS—See Horns, Mechanical

MECHANICS' BLUE—See Blue, Mechanics'

MECHANICS' GOGGLES—See Goggles, Mechanics' and Welders'

MEDICAL EMERGENCY CASES—See Cases, Medical

MERCURY RECTIFIERS—See Rectifiers, Alternating Current

METAL BODIES—See Bodies, Metal

METAL CEMENT—See Cement, Cast Iron

METAL DASHES—See Dashes, Metal

METAL DISC WHEELS—See Wheels, Metal Disc

METAL FLOATS—See Floats, Metal

METAL FUNNELS—See Funnels and Measures, Metal

METAL GASKETS—See Gaskets, Metallic

METAL GEARS—See Gears, Metal

METAL HAMMERS, SOFT—See Hammers, Soft Metal

METAL HOSE—See Tubing, Flexible Metallic

METAL LACQUERS—See Laquers, Metal

METAL LINED HOSE—See Hose, Metal Lined

METAL LOCKERS—See Lockers, Metal

METAL MEASURES—See Funnels and Measures, Metal

METAL MUD GUARDS—See Fenders or Mud Guards, Metal

METAL PINIONS—See Gears and Pinions, Metal

METAL PLANERS—See Planers, Metal

METAL POLISHES—See Polishes, Metal

METAL PRESSINGS—See Stampings

METAL RACKS—See Racks, Metal Tool, Stock and Tire

METAL RADIATOR COVERS—See Shutters, Metal Radiator

METAL SEAT BACKS—See Backs, Metal Seat

METAL SHAPERS—See Shapers, Metal

METAL SHELVING—See Racks, Metal Tool, Stock and Tire

METAL STAMPINGS—See Stampings and Pressings, Metal

METAL TESTING INSTRUMENTS—See Instruments, Metal Testing

METAL TESTING MACHINES—See Machines, Metal Testing

METAL TOOL BOXES—See Boxes, Wood Tool

METAL TRIMMINGS—See Trimmings, Metal

METAL TRUCK CABS—See Cabs, Metal Truck

METALLIC GASKETS—See Gaskets, Metallic

Everything is listed under the NOUN or principal word

RADIATOR COVERS

Our line of Radiator Covers are of a quality that makes delighted customers. Prices are attractive and trade discounts liberal, insuring satisfactory profits.

We carry complete stock for all makes of cars, and can ship you one or a hundred immediately.

Send for catalogue and price list today.

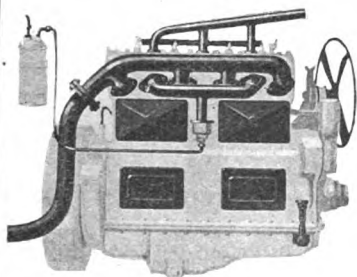
ATLANTIC-PACIFIC MFG. CORP.

129 ATLANTIC AVENUE
Through to 121-125 PACIFIC STREET

BROOKLYN, N. Y.

We Manufacture

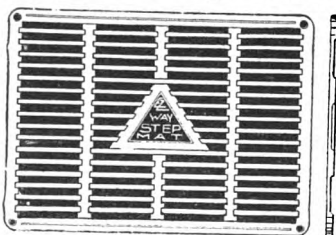
Exhaust Manifolds	Water Manifolds
Heater Manifolds	Stampings
Wire Conduits	Carburetor Tubes
Oil Tubes	Fans



Standard Tool & Mfg. Co.

512-524 East LaFayette Boulevard
DETROIT MICHIGAN

E-WAY Step Mat



Price \$2.00 each

Made entirely of aluminum (cast).

INDESTRUCTIBLE SANITARY PRACTICAL

Permanently attached. Easily and quickly cleaned. Raised from the floor, providing proper circulation for drying the mat and the running board.

Distinctive — Attractive — Ornamental. Adds distinction to the appearance of the car. Absolutely rustless. Write for Discounts.

Manufactured by

THE GEO. E. LAVIETES CO.
218 State St., New Haven, Conn.

PYRMA

ALUMINUM MATTING

STRONGEST IN SERVICE AND LOWEST IN COST

Stock sizes for 25 ft. rolls are 9, 10, 12, 14, 15, 18 and 20 inch widths; for 24 ft. rolls 24, 30 and 36 inch widths. Of course special lengths and widths can always be supplied.

ALUMINUM Moulding

J-shape running board moulding in 18 ft. lengths in stock for immediate delivery.

ALUMINUM HEEL PLATE

Made of special extra heavy aluminum that lasts longer than the car.

Write for samples of matting and moulding.

Manufacturers—Get our attractive prices on quantity lots of matting, moulding or heel plates—all made of aluminum.

Dealers and Jobbers—Good profits are yours—if you push these articles.

WRITE—TODAY—FOR SAMPLES.

KADE PERFORATING COMPANY

171 York Street,

Rochester, New York

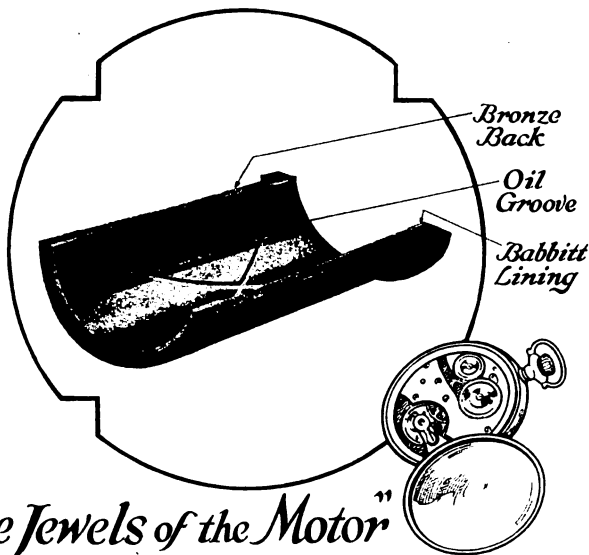
Please mention The Automobile Trade Directory

METALLIC GASKETS FOR FORDS—See Gaskets, Cylinder Head

METALS, Bearing

- Acorn**—See Cadman Mfg. Co.
Adamant—See Magnolia Metal Co.
Aetna Brass & Bronze Co., 1611-35 E. 55th St., Cleveland, O.
Ajax Metal Co., Philadelphia, Pa.
Albani—See Cox Brass Mfg. Co.
Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O. "Lynux."
American Brass Co., Waterbury, Conn. (See page 161.)
American Bronze Corp., Berwyn, Pa. "Non-Gran." (See page opposite Inside Front Cover.)
American Manganese Bronze Co., (Holmesburg), Philadelphia, Pa. "Spare's."
American Non-Ferrous Metals Corp., Chester, Pa. "Cop-Led."
Anderson Foundry Co., Wm. B., 24-30 S. Clinton St., Chicago, Ill. "WB."
Atlas Brass Foundry Co., Columbus, O. (See page 551.)
Auto-Crat—See Syracuse Smelting Works.
Azales—See Vanadium Metals Co.
Bear—See Shonberg, I.
Bear Well—See Chicago Hardware Foundry Co.
Birkenstein & Sons, S., 1032 W. North Ave., Chicago, Ill. "Wizard." (See page 591.)
Blake, Edwin J., 565 Windsor St., Hartford, Conn.
Blatchford Co., E. W., 230 N. Clinton St., Chicago, Ill.
Bound Brook Oil-less Bearing Co., Bound Brook, N. J.
Brass Foundry Co., 711-17 S. Adams St., Peoria, Ill.
Bronze Metal Co., Meadville, Pa. "Vim."
Bunting Brass & Bronze Co., 737 Spencer St., Toledo, O. (See page 175.)
Cadman Mfg. Co., A. W., 2314-16 Smallman St., Pittsburgh, Pa. "Acorn."
Caskey's Brass & Bronze Works, Richmond & York Sts., Philadelphia, Pa.
Chamet—See Chase Rolling Mill Co.
Chase Rolling Mill Co., Grand St., Waterbury, Conn. "Chamet."
Chicago Hardware Foundry Co., 2500 Great Lakes Ave., North Chicago, Ill. "Bear Well."
Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 471.)
Cleveland Graphite-Bronze Co., 30th St. & Chestnut Ave., Cleveland, O. "Dannite."
Climax—See North American Smelting Co.
Clover Leaf—See Williams & Son.
Columbia Smelting & Refining Works, 365-67 West St., New York, N. Y.
Columbian Brass Foundry, Freeport, N. Y. "Excello."
Cop-Led—See American Non-Ferrous Metals Corp.
Copaly—See Michigan Smelting & Refining Co.
Continuous Rolling Mills of the Continuous Casting Corp., Garwood, N. J.
Cox Brass Mfg. Co., Albany, N. Y. "Al-base." (See page 168.)
Cramp & Sons Ship & Engine Building Co., Wm., Philadelphia, Pa. "Parsons." (See page 199.)
Dannite—See Cleveland Graphite-Bronze Co.
Daybro—See Dayton Bronze Bearing Co.
Dayton Bronze Bearing Co., 908-18 E. Third St., Dayton, O. "Daybro."
Defreville, J., 142 McWhorter St., Newark, N. J.
Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
Dutch Boy—See National Lead Co.
Eagle—See Stillman White Foundry Co.
Electric Smelting & Aluminum Co., 555 W. Jackson St., Lockport, N. Y.
Elephant—See Phosphor Bronze Smelting Co.
Emco—See Empire Metal Co.
Empire Metal Co., 320 E. Water St., Syracuse, N. Y. "Premier," "Triumph," "Emco."
Erie Bronze Co., 355 W. 19th St., Erie, Pa. (See page 207.)
Eureka Brass Co., 601 Red Bud Ave., St. Louis, Mo.
Eureka Co., North East, Pa.
Excello—See Columbian Brass Foundry.
Excelsior—See Wildes Son, Thomas.
Fabrig Metal Co., 34 Commerce St., New York, N. Y. (See page 591.)
Frictionless Metal Co., 1103-05 Chestnut St., Chattanooga, Tenn.
Gardiner Metal Co., 1368 W. Lake St., Chicago, Ill.
Genelite—See General Electric Co.
General Aluminum & Brass Mfg. Co., Detroit, Mich. (See page 581.)
General Bronze Foundry Co., 5810 Superior Ave., Cleveland, O. "Werne," "Tenax."
General Electric Co., Schenectady, N. Y. "Genelite." (See page 697.)
Gilbert & Sons Brass Foundry Co., A., 4018 Forest Park Blvd., St. Louis, Mo. (See page 215.)
Globe Brass Works, 1212 W. Liberty St., Cincinnati, O. "Tlmco."
Graham & Co., James, 293 Wooster St., New Haven, Conn.
Great Western Smelting & Refining Co., 41st & Wallace Sts., Chicago, Ill.
Harper, Thomas, 204 Lafayette St., New York, N. Y. "Hi-Servis."
Hayman & Co., Michael, 556 E. Ferry St., Buffalo, N. Y.
Hecla—See Paulson & Son.
Henning & Sons, V., 330 Belmont Ave., Brooklyn, N. Y.
Hi-Servis—See Harper, Thomas.
Hoffman Bronze & Aluminum Casting Co., 998 Addison Rd., Cleveland, O.
Holtum Mfg. Co., Freeport, Ill. (See page 903.)
Howard Metal Co., Second & Canal Sts., Reading, Pa.
Hoyt Metal Co., St. Louis, Mo. "Trojan." (See page 102.)
Hub—See Richards & Co.
Ideal Bronze Co., 1205-69 E. 55th St., Cleveland, O. "Vitaloy." (See page 201.)
Ideal—See Murphy Metals Co.
Ideal Metal Co., 1212 W. Liberty St., Cincinnati, O.
Illinois Smelting & Refining Co., 410 N. Peoria St., Chicago, Ill.
Jacobson & Sons Co., I. M., 920-28 Catherine St., Detroit, Mich. "Motex."
Johnson Bronze Co., New Castle, Pa. (See page 174.)
Kahn Bros., 785-97 Humboldt St., Brooklyn, N. Y. "Victory."
Kelly—See Super-Refined Metals Co.
Kelly Brass Works, 226 W. Ontario St., Chicago, Ill.
Kmco—See Kramer & Co.
Kramer & Co., H., 1324 W. 21st St., Chicago, Ill. "Kmco."
Lehman Bros., Fourth & Jefferson Sts., Hoboken, N. J.

Everything is listed under the NOUN or principal word



"The Jewels of the Motor"

For centuries past, the quality and value of a watch have been determined by its jewels. But the jewels are simply the bearings of the watch.

Then why shouldn't the quality and value of a motor car, truck, tractor, or an aeroplane be, in a great measure, judged by its motor bearings?

The superior quality of the "Ring True" Bronze Back, Babbitt Lined Bearings, produced by the General Aluminum and Brass Manufacturing Company, is evidenced by the fact that it is the largest manufacturer of motor bearings in this country. Today it supplies bearings to a very large percentage of all manufacturers of cars, trucks, tractors, motors and aeroplanes.

GENERAL ALUMINUM & BRASS MFG. CO.
DETROIT, MICH.

MAKERS OF

**Ring True Bearings, Bronze Back Babbitt Lined
 Bearings, Brass Castings, and Aluminum Castings**

RING TRUE BEARINGS

Please mention The Automobile Trade Directory

METALS, Bearing (Continued)

Light Mfg. & Foundry Co., Union & Quen
Sts., Pottstown, Pa.

Lissberger & Son, Marks, 281 Borden Ave.,
Long Island City, N. Y.

Lumen Bearing Co., Buffalo, N. Y.
(See page 589.)

Lynux—See Aluminum Manufacturers, Inc.

McGill Metal Co., Valparaiso, Ind.

McKenna Brass & Mfg. Co., First Ave. &
Ross St., Pittsburgh, Pa.

Magnolia Metal Co., 113-15 Bank St., New
York, N. Y. "Adamant."

Maluminum Castings Co., 1116-30 E. Georgia
St., Indianapolis, Ind.

Martin & Anson, 2326-28 Indiana Ave., Chi-
cago, Ill.

Master—See Murphy Metals Co.

Merchant & Evans Co., 2035 Washington Ave.,
Philadelphia, Pa. "Silver Genuine."

Michigan Smelting & Refining Co., 7885 Jos.
Campau Ave., Detroit, Mich. "Copalay."

Mearl Metal Co., Detroit, Mich.
(See page 101.)

More-Jones Brass & Metal Co., 3132-44 N.
Broadway, St. Louis, Mo.

Motex—See Jacobson & Sons Co.

Murphy Metals Co., 2837 S. Halsted St., Chi-
cago, Ill. "Ideal," "Old Reliable," "Mas-
ter."

Mussy-Lyon Co., Detroit, Mich.
(See page 101.)

Nabralco—See National Bronze & Aluminum
Foundry Co.

National Bronze & Aluminum Foundry Co.,
2539 E. 79th St., Cleveland, O. "Nabralco."

National Lead Co., 111 Broadway, New
York, N. Y. "Dutch Boy."
(See page 207.)

Non-Gran—See American Bronze Corp.

North American Smelting Co., 300 W.,
Thompson St., Philadelphia, Pa. "Vulcan,"
"Philadelphia," "Climax."

Oberdorfer Brass Co., M. L., 304 E. Wata-
st., Syracuse, N. Y.

Old Reliable—See Murphy Metals Co.

Owosso Bronze Bearing Co., Owosso, Mich.

Parsons—See Cramp & Sons Ship & Engine
Building Co.

Paulson & Son, Thomas, 97 Second Ave.,
Brooklyn, N. Y. "Hecla."

Philadelphia—See North American Smelting
Co.

Phosphor-Bronze Smelting Co., 2200
Washington Ave., Philadelphia, Pa.
"Elephant." (See page 583.)

Pittsburgh White Metal Co., 3116 Penn Ave.,
Pittsburgh, Pa. "Rinehart."

Premier—See Empire Metal Co.

Reeves & Co., Paul S., 1415-25 Catharine St.,
Philadelphia, Pa.

Revolution—See Sanford Co.

Rhoads & Co., R. W., 15-17 West Ave.,
Long Island City, N. Y.

Richards & Co., 300-06 Causeway St., Bos-
ton, Mass. "Rico," "Hub."

Rico—See Richards & Co.

Rinehart—See Pittsburgh White Metal Co.

Rowell Mfg. Co., Union & Hancock Sts., Ap-
pleton, Wis.

Sanford Co., David C., 33-39 Drouve St.,
Bridgeport, Conn. "Revolution."

Seaboard Metal Corp., 221 Randolph Ave.,
Jersey City, N. J.

Semper Idem—See Wildes Son.

Sherwood Brass Works, 6331 E. Jefferson Ave.,
Detroit, Mich.

Shonberg, I., 133 Flushing Ave., Brooklyn,
N. Y. "Bear."

Silver Genuine—See Merchant & Evans Co.

Smith Hardware Co., Frank F., 35 Clay St.,
Newark, N. J.

Spare's—See American Manganese Bronze Co.

Standard Separator Co., 45th St. & Burnham
Rd., Milwaukee, Wis.

Stanley—See Syracuse Smelting Works.

Stillman White Foundry Co., 1 Bark St.,
Providence, R. I. "Eagle."

Super-Refined Metals Co., 2631 Wood-
ward Ave., Detroit, Mich. "Kelly."
(See page 589.)

Superior Bronze Corp., 19th & Poplar Sta.,
Erie, Pa.

Syracuse Smelting Works, 192 Diamond St.,
Brooklyn, N. Y. "Auto-Crat," "Stanley."

T. B. C.—See Titanium Bronze Co.

Tenax—See General Bronze Foundry Co.

Thiery & Kendrick Mfg. Co., 2724 Frank-
lin St., Detroit, Mich. (See page 175.)

Timco—See Globe Brass Works.

Titan Metal Co., Allegheny St., Bellefonte, Pa.

Titanium Bronze Co., Sugar & Lafayette Sts.,
Niagara Falls, N. Y. "T. B. C."

Triumph—See Empire Metal Co.

Trojan—See Hoyt Metal Co.

U. S. Reduction Co., East Chicago, Ind.

U. S. A.—See United Smelting & Aluminum
Co.

United American Metals Corp., 192 Diamond
St., Brooklyn, N. Y.

United Smelting & Aluminum Co., 133-39
Commerce St., New Haven, Conn. "U. S. A."

Vanadium—See Enterprise Metal Co.

Vanadium Metals Co., Vanadium Bldg., Pitts-
burgh, Pa. "Amalea."

Victory—See Kahn Bros.

Vim—See Bronze Metal Co.

Vitaloy—See Ideal Bronze Co.

Vulcan—See North American Smelting Co.

WB—See Anderson Foundry Co.

Wellman Bronze Co., Cleveland, O.
(See page 215.)

Wensley Metal Products Co., 15th & Blake
Sts., Denver, Colo.

Werne—See General Bronze Foundry Co.

Whitehouse Mfg. Co., E. A., 42-54 Elm St.,
Newark, N. J. (See page 174.)

Wildes Son, Thomas, 339 Fifth Ave., New
York, N. Y. "Semper Idem," "Excelsior."

Williams, Franklin, 251 Jefferson St.,
Newark, N. J. (See page 75.)

Williams & Son, E. A., 106-11 Plymouth St.,
Jersey City, N. J. "Clover Leaf."

Wizard—See Birkenstein & Sons.

**METALS, DEALERS IN—See Steel, Deal-
ers In**

**METERS, AMPERE—See Ammeters and
Voltmeters; also Gages, Battery**

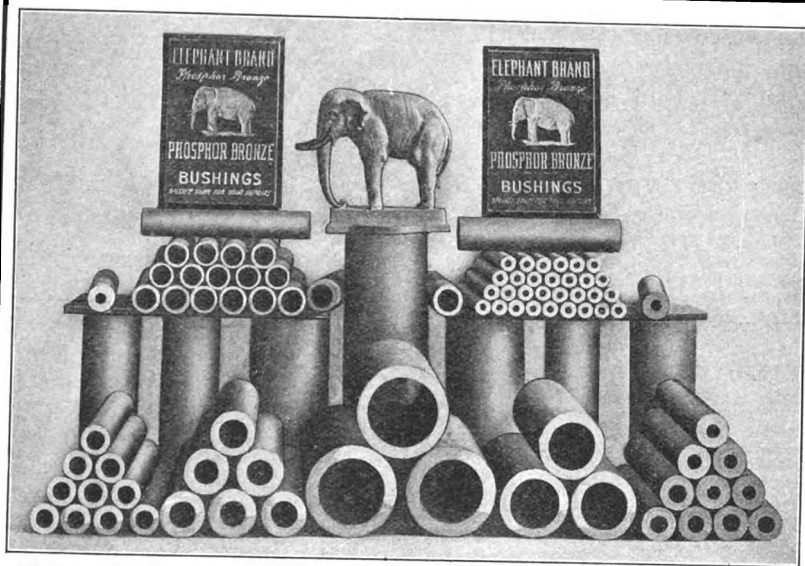
**METERS, COMPRESSION—See Gages,
Cylinder Compression**

**METERS or ODOMETERS, Distance
Recording**

(For combined Odometers and Speedometers—See
Speedometers)

American Taximeter Co., 14 W. 61st St., New
York N. Y. "Dreadnaught."
Consolidated Instrument Co. of America,
4411 Eighth Ave., New York, N. Y. "Tel."
(Importers.) (See page 841.)
Dreadnaught—See American Taximeter Co.

Everything is listed under the NOUN or principal word



QUALITY IS THE BEST ASSURANCE OF SATISFACTION

**Elephant
Brand
Phosphor-Bronze
"S" Bearing
Metal
BUSHINGS**

**145 SIZES
Immediate
Delivery**

Outside Diameter	SIZE OF CORES															
	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 5/8"	1 3/4"	2"	2 1/8"	2 1/4"	2 3/8"	2 1/2"	2 5/8"	3"	3 1/8"	3 1/4"
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4 1/4"																
4 3/8"																
5"																
5 1/8"																
5 1/4"																
5 3/8"																
6"																

**ALL
12" LONG**

**SOLIDS
1/2 to 4" dia's
Carried in
Stock**

1 1/8" 1 1/4" 1 3/8" 1 1/2" 1 5/8" 1 3/4" 2" 2 1/8" 2 1/4" 2 3/8" 2 1/2" 2 5/8" 3" 3 1/8" 3 1/4" 3 3/8" 4" 4 1/8" 4 1/4" 4 3/8" 5" 5 1/8" 5 1/4" 5 3/8" 6"

THICKNESS OF WALLS

THE PHOSPHOR-BRONZE SMELTING CO.
2200 Washington Ave. Philadelphia, Pa. U. S. A.

Please mention The Automobile Trade Directory

METERS OR ODOMETERS, Distance Recording (Continued)

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)

Tel—See Consolidated Instrument Co. of America.

Veeder Mfg. Co., 23 Sargeant St., Hartford, Conn. (See page 585.)

METERS OR ODOMETERS, Distance Recording, for Fords

(See also Speedometers and Odometers)

J-M—See Johns-Manville Co.

Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M."

Veeder Mfg. Co., 23 Sargeant St., Hartford, Conn. (See page 585.)

METERS, Gasoline or Oil

(For use in connection with Gasoline or Oil Storage Systems to indicate or record the amount drawn out)

Bowser & Co., S. F. 1314 Creighton Ave., Fort Wayne, Ind.

Buffalo Meter Co., 2993 Main St., Buffalo, N. Y. "Niagara."

Niagara—See Buffalo Meter Co.

Tokheim Co., Cedar Rapids, Ia. "Vac."

Vac—See Tokheim Co.

METERS, GASOLINE CONSUMPTION—See Gages, Gasoline Consumption

METERS, GASOLINE FLOW—See Gages, Gasoline Consumption

METERS, Grade

(For attaching to car to indicate degree of grades)

Adams Co., 295 Sixth St., Dubuque, Ia. "Gradometer."

Genco—See General Scientific Equipment Co. General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Gradometer—See Adams Co.

Hillmeter—See Meteor Sales Corp.

Meteor Sales Corp., 140 W. 68th St., New York, N. Y. "Hillmeter."

Weinhagen & Hespe, 159-65 Leonard St., New York, N. Y.

METERS, HEAT INDICATING — See Meters, Water Temperature Indicating

METERS, Magnet

(For investigating or testing the magnetic qualities of permanent magnets)

Hols, Herman A., 17 Madison Ave., New York, N. Y.

METERS, Magneto, for Fords

Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Hoyt Electrical Instrument Works, Pennacook, N. H.) (See page 75.)

Eeco—See Electric Equipment Co.

Electric Equipment Co., 1340 S. Hope St., Los Angeles, Cal. "Eeco."

Hoyt Electrical Instrument Works—See Burton-Rogers Co.

Valley Electric Co., 4919 Connecticut Ave., St. Louis, Mo.

METERS, OIL—See Meters, Gasoline

METERS, Oil Temperature Indicating

(For indicating the temperature of the lubricating oil)

Climax Motor Devices, Chagrin Falls, O.

Moto-Meter Co., Long Island City, N. Y. (See page 585.)

National Gauge & Equipment Co., La Crosse, Wis. (See page 401.)

METERS, SPEED—See Speedometers

METERS, TAXI—See Taximeters

METERS, Truck Load Indicating

Auto Loadmeter, Rockville Centre, N. Y.

Black & Decker Mfg. Co., Towson Heights, Baltimore, Md. "Loadometer."

Cammen Laboratories Co., 42 W. 39th St., New York, N. Y. "Carsafe."

Carsafe—See Cammen Laboratories Co.

Loadometer—See Black & Decker Mfg. Co.

Tractometer Co., Glauson & Santa Fe Aves., Los Angeles, Cal.

METERS, VACUUM TANK—See Gages, Vacuum Tank

METERS, Viscosity

(For determining or indicating condition of oil in crank case)

Akers, Jr. Co., William, Philadelphia, Pa. "Lea." (See page 585.)

Lea—See Akers, Jr. Co.

Larcliff Dilut-O-Meter—See Lubricating Appliance Mfg. Co.

Lubricating Appliance Mfg. Co., 1464 E. 57th St., Chicago, Ill. "Larcliff Dilut-O-Meter."

METERS, VOLT—See Ammeters and Voltmeters; also Gages, Battery

METERS, Water Temperature Indicating

(For attachment to radiator or dash to show temperature of cooling water)

A. E. M.—See Moeller, A. E.

Auto Equipment Corp., 105 W. Monroe St., Chicago, Ill. "Benson."

Autostat—See Moeller, A. E.

Benson—See Auto Equipment Corp.

Borg & Beck Co., 914 S. Michigan Ave., Chicago, Ill. (See page 261.)

Boyce MotoMeter—See Moto-Meter Co.

Foxboro Co., Neponset Ave., Foxboro, Mass.

Genco—See General Scientific Equipment Co. General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

H. T. S. Indicator Co., Chester, Pa.

Lurie, John, 1789 Broadway, New York, N. Y.

Metalware Corp., 229 W. Superior St., Chicago, Ill. "Motor Eye." (See page 559.)

Moeller, A. E., 261 Sumpter St., Brooklyn, N. Y. "A. E. M." "Autostat." (See page 477.)

Moto-Meter Co., Long Island City, N. Y. "Boyce MotoMeter." (See page 585.)

Motor Eye—See Metalware Corp.

Everything is listed under the NOUN or principal word

Veeder



**HUB
ODOMETER**

Records truck mileage with the necessary accuracy to show *exact costs* for every mile traveled—and for every item, such as fuel, oil, tires, battery-maintenance and repairs. Registers up to 100,000 miles in tenths of a mile, then repeats. Seals onto front hub; cannot be made to register falsely. In ordering, mention the make, model, year of manufacture of truck and size of front wheel.

Always registers miles forward, whether truck runs forward or backward. Regular model, price \$20. Special model for FORD truck, \$15. Write for brief literature.

THE VEEDER MFG. CO.

22 Sargeant St.

Hartford, Conn.

New York Distributors
Quinlan-Treiber Corp.
8 Columbus Circle

Chicago Distributors
F. A. Brinoff,
550 Washington Blvd.

Detroit Distributors
Geo. F. Balk Sales Co.
8 Selden Street

Philadelphia Distributors
Crown Auto Specialties
Co., 1611 Vine St.

California Distributors
F. Somers Peterson Co., 57 California St.,
San Francisco

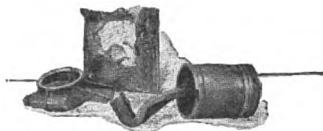
LEA VISCO-METER



BEFORE fuel fouled crankcase oil has become so diluted, so thinned out, that it no longer has any value as a lubricant—before it becomes a positive menace to the motor parts—the Visco-Meter warns motorists to completely change the oil.

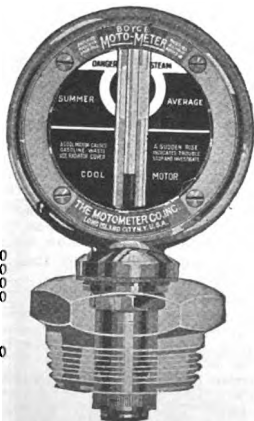
Every car—truck and tractor owner—is a prospect. Write for details and discounts

William Ackers, Jr., Co.
Philadelphia, Pa.



BOYCE MOTO METER

Standard
Model
\$10.00



OTHER MODELS and LIST PRICES

De Luxe Model
Complete with
Schlaich Lock) \$15.00
Universal Model 7.50
Junior Model . . 5.00
Midget Model . . 2.50
Spec. Model for
Fords (Complete
with handsome
Radiator Cap) . 3.50

Get Our WINDOW DISPLAY OUTFIT

PUT your window to work selling Boyce Moto-Meters with a display of these new sales-getters. Each outfit includes:

- 1 Embossed Metal Window Cut-out showing Boyce Moto-Meter 20-in. high;
- 5 Metal Display Stands (4 regular, 1 Ford type)
- 2 Counter Cut-outs
- 2 "Keep-Cool" Demonstrators
- 10 Catalogs and 50 Folders

This complete Window Display Outfit will be furnished free on request to any dealer selling Boyce Moto-Meters.

THE MOTO-METER COMPANY, INC.
LONG ISLAND CITY NEW YORK

Please mention The Automobile Trade Directory

METERS, Water Temperature Indicating (Continued)

National Gauge & Equipment Co., La Crosse, Wis. "Radi-Meter."
(See page 401.)

Protexometer Mfg. Co., Camden, N. J. "Watch Dog." (See page 589.)

Radi-Meter—See National Gauge & Equipment Co.

Stewart-Warner Speedometer Corp., Chicago, Ill. "Warn-O-Meter."
(See page 589.)

Warn-O-Meter—See Stewart-Warner Speedometer Corp.

Watch Dog—See Protexometer Mfg. Co.

METERS, Water Temperature Indicating, for Fords

(For attachment to radiator to show temperature of cooling water)

Auto Equipment Corp., 105 W. Monroe St., Chicago, Ill. "Benson."

Benson—See Auto Equipment Corp.

Boyce MotoMeter—See Moto-Meter Co.

Moto-Meter Co., Long Island City, N. Y. "Boyce MotoMeter." (See page 585.)

MICA SHEETS, TUBES, WASHERS and CORES

American Mica Co., Newton Lower Falls, Mass.

Asheville Mica Co., Biltmore, N. C.

Charland & Co., E. W., 216 Main St., Tilton, N. H.

Chicago Mica Co., Lincoln & Campbell Sts., Valparaiso, Ind. "Micabond."

Granite State Mica Co., 63 Gorham St., West Somerville, Mass.

Mica Mfg. Co., 135 Johnson St., Brooklyn, N. Y.

Micabond—See Chicago Mica Co.

Munsell & Co., Eugene, 63 Church St., New York, N. Y.

Nemco—See New England Mica Co.

New England Mica Co., Waltham, Mass. "Nemco."

New England Minerals Co., 54 Devonshire St., Boston, Mass. "Yankee."

Ray-O Mfg. Co., 246-52 Fulton St., Brooklyn, N. Y.

Richmond Mica Co., 801 E. Main St., Richmond, Va. "Silver Sheen."

Schoonmaker Co. A. O., 88 Park Pl., New York, N. Y. "Silver Sheen."

Silver Sheen—See Schoonmaker Co.

Tar Heel Mica Co., Plumtree, N. C.

Watson Bros., 170 Purchase St., Boston, Mass.

Yankee—See New England Minerals Co.

MICA, TIRE—See Talc, Tire

MICROMETER CALIPERS

Almond Mfg. Co., T. R., 1 Maple Ave., Ashburnham, Mass.

Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.

Coats Machine Tool Co., 30 Church St., New York, N. Y. "Prestometer."

Goodell-Pratt Co., Greenfield, Mass.

International Co-Operative Tool & Machinery Co., 1512 24th Ave., Oakland, Cal.

Prestometer—See Coats Machine Tool Co.

Reed Small Tool Works, Cherry & Vine Sts., Worcester, Mass.

Slocumb Co., J. T., 85 Oxford St., Providence, R. I.

Starrett Co., L. S., Athol, Mass.

MILEAGE INDICATORS—See Meters, Distance

MILLING ATTACHMENTS—See Attachments, Lathe Milling

MILLING COMPOUNDS—See Lubricants, Cutting

MILLING CUTTERS—See Cutters, Milling

MILLING MACHINES—See Machines, Milling

MILLS, BORING—See Machines, Boring

MILLS, DRY SHAFT BEARING END for Fords

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.

MILLS, STEERING KNUCKLE BUSHING for Fords

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.

MINIATURE INCANDESCENT LAMPS—See Lamps, Miniature Incandescent

MIRROR REFLECTORS—See Reflectors, Mirror Lamp

MIRRORS, Adjustable Windshield, Dashboard and Fender

(To enable driver to see to the rear of the car)

Accessory Supply Co., Reliance Bldg., Kansas City, Mo. "Asco."

Asch & Co., Inc., 16-24 W. 61st St., New York, N. Y. (See page 247.)

Asco—See Accessory Supply Co.

Alexander Microscope Co., 1991 Broadway, New York, N. Y. "Microscope," "Safetyscope." (See page 587.)

American Auto Lamp Co., 20 Desbrosses St., New York, N. Y.

Amesbury Bent Glass Co., Amesbury, Mass.

Arkay—See Riley-Klots Mfg. Co.

Auto Glass & Mirror Corp., 314 Jefferson Ave., Buffalo, N. Y. (See page 587.)

Auto Mirror & Mfg. Co.—See Oettinger Corp.

Automotive Accessories, Inc., Kokomo, Ind. "Rearvu." (See page 573.)

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Recto."

Autoscope—See Oettinger Corp.

Autoscope—See Whitehouse Mfg. Co.

Beedee Distributing Service, 613 W. Pico St., Los Angeles, Cal. (Sole Distributors for

De Luxe Auto Mfg. Co., Los Angeles, Cal.

Berger & Co., 208 W. 11th St., Los Angeles, Cal. "Cop-Spotter."

Brewer Tichener Corp., Cortland, N. Y. "Pioneer."

Everything is listed under the NOUN or principal word

This Mark Identifies the Genuine



"CHIEF" Auto Mirrors

The advantages of selling "CHIEF" AUTO MIRRORS are:

Guaranteed not to Crack, Peel or develop unsightly black spots.

Adjustable to Any Angle.

Positive interchangeable Brackets that Simply Won't Rattle and that make it easy to fit any model of car.

The profit on the "Chief" line is attractive and sale price reasonable considering the High quality of the merchandise.

WRITE TODAY FOR ILLUSTRATED
PRICE LIST

Dept. B

BRITTON AUTO PRODUCTS CO., Inc.
67 West 67th Street, New York City

"Mirroscope"

The "Third Eye" of the Automobile



The trademark "Mirroscope" is borne by the products of the oldest and largest manufacturers of automobile mirrors in the world.

ALEXANDER
MIRROSCOPE
COMPANY

1991 Broadway
New York

Jobbers Are Getting a Big Call for Autoglass Mirrors

The only mirror vertically adjustable for height of person and rear opening in car top. Has a superb quality, beveled, plate-glass mirror, giving a

beautifully clear reflection of entire road behind to both sides of car. They are easily

attached to any car top or windshield, are never in the way, and stay where put without shaking loose or chattering. Mirrors can be cheaply replaced when broken without buying new bracket.

Waterproof $4\frac{1}{4}$ in.

diameter mirrors

with heavier and simpler brackets are furnished for trucks

with wood or metal windshields.

No. 400 8 in. stem for wood

windshields or No. 405 for metal

windshields. Nos. 401 and 406, with

12 in. stems, are for wood and

metal windshields respectively. Nos.

402 and 407, 16 in. stem, are for

wood and metal windshields, re-

spectively. All mirrors are hand-

somely finished in keeping with

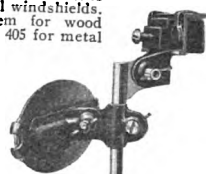
service for which planned.



No. 205— $2\frac{1}{2}$ x 7 in.
No. 305— $2\frac{1}{2}$ x 10 in.



No. 200— $2\frac{1}{2}$ x 7 in.
No. 300— $2\frac{1}{2}$ x 10 in.



New Bracket and Round
Mirror. No. 100— $4\frac{1}{2}$ in.
dia.

PLATE GLASS AMBER SHIELD SAVES EYES AND MAKES NIGHT DRIVING SAFE AND SPEEDY

It is securely held by bracket that is instantly adjustable to any desired position, stays where

put, and will not chatter. A quick

seller, especially when advertised right after acci-

dents due to glare.



No. 600 Kill-Glare
Amber Shield

AUTOGLASS WINDSHIELD WINGS

for Ford and other cars have a splendid make up and hand adjustable bracket.

SPECIAL MIRRORS AND GLASS of all kinds for body, windshield or windshield wings will be supplied for remanufacturers.



No. 700
 $2\frac{1}{2}$ x 7 in.
\$1.75

AUTO GLASS & MIRROR CORP.

314 Jefferson Ave., Buffalo, N. Y.

Please mention The Automobile Trade Directory

MIRRORS, Adjustable Windshield, Dashboard and Fender (Contd.)

Bridgeport Mirror Mfg. Co., 520 Water St., Bridgeport, Conn. "Fein."
(See page 777.)

Britton Auto Products Co., Dept. B, 67 W. 67th St., New York, N. Y. "Chief."
(See page 687.)

C-S—See Culver-Stearns Mfg. Co.

C-Bak—See International Sales Corp.

Chesler & Son Co., J., 147 Gratton St., Brooklyn, N. Y.

Chief—See Britton Auto Products Co.

Clearview—See D'Eyraud, Louis.

Cop-Spotter—See Berger & Co.

Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 678.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass. "C-S."

D'Eyraud, Louis, 452 W. 16th St., Los Angeles, Cal. "Clearview."

De Luxe Auto Mfg. Co.—See Beedee Distributing Service.

Diuguid Bros., 975 Atlantic Ave., Brooklyn, N. Y.

Elbe Motor Products Co., 414 W. Pico St., Los Angeles, Cal. "Speedascope."

Essandee Corp., 330 W. 16th St., Los Angeles, Cal. "Rearrite."

Fein—See Bridgeport Mirror Mfg. Co.

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Distributors.)
(See pages 569 to 574.)

G. W.—See Gartley-Weston Mfg. Co.

Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich. "G. W."

H. L. G. Mfg. Co., W. 29th St. & Canal, Indianapolis, Ind.

H. & H.—See Simplex Windshield Wing Co. of Chicago.

Hindview—See Kales Stamping Co.

Hoco—See Hoeft & Co.

Hoeft & Co., 400 N. Ashland Ave., Chicago, Ill. "Hoco."

International Sales Corp., 311 Fairfield Ave., Bridgeport, Conn. "C-Bak."

Johnston Mfg. Co., William R., 451-69 E. Ohio St., Chicago, Ill. (See page 437.)

K-S—See Kilborn-Sauer Co.

Kales Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich. "Hindview."

Kaufman & Sons, Chas., 1623 E. First St., Santa Ana, Cal.

Kilborn-Sauer Co., Post Road, Fairfield, Conn. "K-S."

Krimsky, Emil J., 1440 S. Michigan Ave., Chicago, Ill.

Lawson Auto Specialty Co., 47 Bergen St., Brooklyn, N. Y. "Reflectoscope."

Liberty Works, Egg Harbor City, N. J. (See page 621.)

Manhattan Mirror Works, 46-50 Wooster St., New York, N. Y.

Metal Goods Mfg. Co., 566 Commercial St., Boston, Mass.

Mirror Park-Lite Corp., 208 W. 17th St., New York, N. Y. "Ny-El-Co."

Mirrorscope—See Alexander Mirrorscope Co.

Moswell Mfg. Co., 175 Grand St., New York, N. Y.

Neverout—See Rose Mfg. Co.

Ny-El-Co.—See Mirror Park-Lite Corp.

Oettinger Corp., F. W., 25 Vanderbilt Ave., New York, N. Y. (Sole Distributors for Auto Mirror & Mfg. Co., New York, N. Y. "Autoscope," "Reer Flex.")

Paulson Mfg. Co., 491 Eddy St., Cleveland, O. "Road-Scope."

Perkins Marine Lamp Corp., 1948 Pitkin Ave., Brooklyn, N. Y. "Perko."

Perko—See Perkins Marine Lamp Corp.

Pioneer—See Brewer Tichenor Corp.

Rearrite—See Essandee Corp.

Rearometer Co., 25 W. 45th St., New York, N. Y.

Rearvu—See Automotive Accessories, Inc.

Reer Flex—See Oettinger Corp.

Reflecto—See Unbreakable Mirror Co.

Reflectoscope—See Lawson Auto Specialty Co.

Riley-Klots Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."

Road-Scope—See Paulson Mfg. Co.

Rosco—See Rosen & Co.

Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

Safetyscope—See Alexander Mirrorscope Co.

See-Bak—See Thomas Mfg. Co.

Sees-Al Mfg. Co., 1810 W. Lake Ave., Seattle, Wash.

Simplex Windshield Wing Co. of Chicago, 2206 S. Michigan Blvd., Chicago, Ill. "H. & H."

Speedascope—See Elbe Motor Co.

Starr Bros. Bell Co., East Hampton, Conn.

Thoma & Son, Fairfield, Ia.

Thomas Mfg. Co., 1410-12 Dearborn St., Seattle, Wash. "See-Bak."

Tift-Martin Co., 9 W. Poplar Ave., Columbus, O.

Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.

Unbreakable Mirror Co., Hackettstown, N. J. "Reflecto."

W. & K. Mirror Co., Indianapolis, Ind.

W. B.—See Wildenberg Bros.

Weidely Accessories Co., 523 Massachusetts Ave., Indianapolis, Ind.

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. "Autoscope."

(See page 174.)

Wildenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."

MIRRORS, COWL LIGHT REFLECTING

(Small mirror to mount near instruments to reflect light from dash or cowl light on them)

Cole Visible Gas Gauge Co., 1364 S. Figueroa St., Los Angeles, Cal.

MIRRORS, Water Gauge

(To make possible the reading of water gauge on steam cars from the seat)

Knox Co., Frank J., Hartford, Conn.

MIXERS, ECONOMIZERS or AGITATORS and AUXILIARY AIR VALVES

Aerodyn—See Standard Auto Mfg. Co.

Aerofram Co., 167 Massachusetts Ave., Boston, Mass.

Alliance Co., 45 W. 34th St., New York, N. Y. "Hugill."

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Liti-Fiend."

Anglo American Aerator Co., Monadnock Bldg., San Francisco, Cal. "Howen."

Everything is listed under the NOUN or principal word

Stewart WARN-O-METER

Prevents Motor Overheating



Driver's View

Flashes
Red before
Motor
Overheats



Reverse side

We can furnish over
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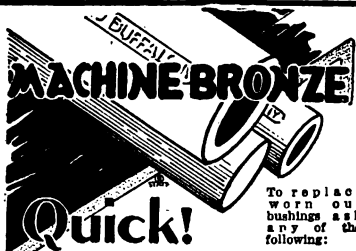
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Atlanta—Pasco Tool Company.
Grand Rapids—McMullen Machinery Company.
Rochester—Homer Strong, Inc.
Olean—Luther Manufacturing Company.
Cleveland—The Cleveland Tool & Supply Company.
Portland, Me.—E. Corey & Co.
Lewistown, Me.—Harvey Machine Company.
Augusta, Me.—Brooks Hardware Company.
New York—C. P. Dienst Company.
Auburn, N. Y.—Smith & Pearson.

Please mention The Automobile Trade Directory

MIXERS, ECONOMIZERS or AGITATORS and AUXILIARY AIR VALVES (Continued)

Automotive Mfg. Co., 114-16 E. Fourth St., Dayton, O. "York."
 Bailey Co., Wm. J., 401 Mulberry St., Newark, N. J. "C. B."
 Ball & Ball—See Penberthy Injector Co.
 Barnes, W. Porter, 102 Roberts Ave., Santa Rosa, Cal. "Powerene."
 Bee & Gee Co., 1414 Broadway, New York, N. Y.
 Big 4—See Carleton Co.
 Boucher, Geo. S., Damascus, Va.
 Brown-Taylor-Greene Co., 1232-35 S. Michigan Ave., Chicago, Ill. "Empire."
 C. B.—See Bailey Co.
 Carburetor Mantle Co., 1926 Broadway, New York, N. Y.
 Carleton Co., 170 Summer St., Boston, Mass. "Big 4."
 Clemmer, G. H., West Alexandria, O.
 Collinge, Lee, 325 Glison St., Portland, Ore.
 Conservo Sales Co., 225 Fifth Ave., New York, N. Y.
 D. & P. Auto Repair Co., 1926 Broadway, New York, N. Y.
 Daddy Vaporizer Co., 1317 Maumee Ave., Fort Wayne, Ind.
 Dempsey Cycle Co., Perry Bldg., Philadelphia, Pa.
 Deppe Motors Corp., 151 Church St., New York, N. Y. "Stanley."
 Elder Mfg. Co., 2305 N. Illinois St., Indianapolis, Ind. "Radio."
 Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y.
 Flintham & Gilstrap Co., 209 Kline Ave., Topeka, Kans. "Votalizer."
 Gasco—See Gasket Supply Co.
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Gasco."
 Gasave—See Leathers Bros. Co.
 Green Bros. Mfg. Co., 126 Mass. Ave., Boston, Mass.
 Hard Mfg. Co., Tonawanda St., Buffalo, N. Y. "Superfactor."
 Hoosier Sub-Carburetor Co., 300 N. Illinois St., Indianapolis, Ind.
 Howes—See Anglo American Aerator Co.
 Hugill—See Alliance Co.
 Ideal Motor Appliance Co., Singer Bldg., New York, N. Y.
 Kelley, J. M., 80 N. Water St., Rochester, N. Y.
 Kero-Mix—See Patterson, F. W.
 Kraus & Kraus, 114 E. State St., Marshall, Mich.
 Leathers Bros. Co., Howard, Pa. "Gasave."
 Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
 Liti-Fit—See American Automobile Accessories Co.
 Lydon Mfg. Co., 108 N. Wabash Ave., Chicago, Ill. "Speedler."
 M & M Mfg. Co., 7447 S. Chicago Ave., Chicago, Ill. (See page 591.)
 M & M Sales Co., Lewiston, Pa.
 Martin Shock Absorber Corp., 1301-1401 E. Slauson Ave., Los Angeles, Cal.
 Patterson, F. W., 336 E. 43d St., Chicago, Ill. "Kero-mix."
 Peck, E. C., 432 Third St., San Bernardino, Cal.
 Penberthy Injector Co., Detroit, Mich. "Ball & Ball." (See page 407.)
 Perrin Mfg. Co., 965 Woodward Ave., Detroit, Mich.
 Powerene—See Barnes, W. Porter.
 Progressive Mfg. Co., 463 64th Ave., West Allis, Wis.

Radio—See Elder Mfg. Co.
 Speedler—See Lydon Mfg. Co.
 Standard Auto Mfg. Co., 314 E. Genesee St., Syracuse, N. Y. "Aerodyn."
 Stanley—See Deppe Motors Corp.
 Stewart Machine Works, Alfred C., 310 E. Tenth St., Los Angeles, Cal.
 Superfactor—See Hard Mfg. Co.
 Thermo-Gasket Co., 57½ Dey St., New York, N. Y.
 Vaghi Vaporizer Co., Depot Pl., Bethel, Conn.
 Victor Steel Stamping Co., 1013 Downing St., Denver, Colo.
 Votalizer—See Flintham & Gilstrap Co.
 Wilson Vaporizer Co., Roslyn, Pa.
 Wizard Mfg. Co., 551 E. Main St., Rochester, N. Y.
 York—See Automotive Mfg. Co.

MIXERS, ECONOMIZERS or AGITATORS and AUXILIARY AIR VALVES, for Fords

(See also *Reactors, Mixers; also Primers, engines*)
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Footair."
 American Automatic Devices Co., Chicago, Ill. "Midget." (See page 251.)
 Apex Electric Mfg. Co., 1410 W. 59th St., Chicago, Ill.
 Automat-Co.—See Automotive Material Co.
 Automotive Material Co., 451 E. Ohio St., Chicago, Ill. "Automat-Co."
 Ball & Ball—See Penberthy Injector Co.
 Big 4—See Carleton Co.
 Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass. "Pledger."
 Boucher, Geo. S., Damascus, Va.
 Bull Dog—See Toledo Cable Co.
 Carleton Co., 170 Summer St., Boston, Mass. "Big 4."
 Clemmer, G. H., West Alexandria, O.
 Daddy Vaporizer Co., 1317 Maumee Ave., Ft. Wayne, Ind.
 Ever-Right Products Corp., 351-53 Jay St., Brooklyn, N. Y.
 Flintham & Gilstrap Co., 209 Kline Ave., Topeka, Kans. "Votalizer."
 Footair—See American Automobile Accessories Co.
 Green Bros. Mfg. Co., 126 Mass. Ave., Boston, Mass.
 Hawkins Mfg. Co., Vineland, N. J.
 Ha Mas—See Hudson Motor Specialties Co.
 Hoosier Sub-Carburetor Co., 300 N. Illinois St., Indianapolis, Ind.
 Hub Auto Specialties Co., 100 Arlington Ave., Charlestown, Mass.
 Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Ha Mas."
 Ideal Motor Appliance Co., Singer Bldg., New York, N. Y.
 Industrial Mfg. Co., Railway Exchange, Kansas City, Mo. "Vac."
 Midget—See American Automatic Devices Co.
 Motor Essentials, Inc., 256 Main St., Buffalo, N. Y.
 Multipower Co., 916 N. Marshfield Ave., Chicago, Ill.
 Nu-Wae—See Relax Co.
 Ogden Multiplier Co., Press Annex Bldg., Binghamton, N. Y.
 Penberthy Injector Co., Detroit, Mich. "Ball & Ball." (See page 407.)
 Pledger—See Boston Tool & Mfg. Co.
 Relax Co., 2118 Monroe Ave., Norwood, O. "Nu Wae."
 Remington Mfg. Co., 1513 Walnut St., Philadelphia, Pa.
 Roper & Co., C. F., Hopedale, Mass.

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Standard Motor Products Mfg. Corp., 908 W. Chicago Ave., Chicago, Ill.
 Star Device Mfg. Co., 2201-03 Second Ave., Seattle, Wash.
 Stewart Machine Works, Alfred C., 310 E. Tenth St., Los Angeles, Cal.
 Stransky Mfg. Co., Pukwana, S. Dak.
 Thermo-Gasket Co., 57½ Dey St., New York, N. Y.
 Toledo Cable Co., 1035 Grand Ave., Toledo, O.
 "Bull Dog."
 U. S. Carburetor Co., 347 Madison Ave., New York, N. Y.
 Vac—See Industrial Mfg. Co.
 Victor Steel Stamping Co., 3103 Downing St., Denver, Colo.
 Totalizer—See Flintham & Gilstrap Co.

MIXTURE HEATERS—See Heaters, Mixture

MOHAIR CLOTH—See Cloth, Mohair

MOHAIR TOP DRESSING—See Dressing, Mohair Top

MOISTENERS, Air or Mixture

(For feeding water into the intake manifold)

Aderholdt Mfg. Co., 1533 Broadway, Denver, Colo.
 American Automotive Corp., 1003 S. Michigan Ave., Chicago, Ill.
 Atlas Auto Specialties Corp., 51 W. 66th St., New York, N. Y. "Ged."
 Auto Accessory & Engineering Co., Walker & Wight Sts., Detroit, Mich.
 Auto Water Pep Co., 2204 S. Michigan Ave., Chicago, Ill.
 Automatic Oxidizer Co., Hartman Bldg., Columbus, O.
 Automatic Steam Carburetor Co., 1241 S. Michigan Ave., Chicago, Ill.
 Campbell, V. R., 126 Pennsylvania Ave., Elmira, N. Y. "Victor."
 Carbon Proof Motor Co., 2929 McGee Trafficway, Kansas City, Mo.
 Casey Asco Mfg. Co., 1504 Grand Ave., Kansas City, Mo. "Dublervis."
 Comfort Motor Machine Co., 715 Galapage St., Denver, Colo.
 Douglas Auto Appliance Co., 2845 Chicago Ave., Minneapolis, Minn.
 Dublervis—See Casey Asco Mfg. Co.
 Esta Co., 107 Massachusetts Ave., Boston, Mass.
 Fisher Co., 319-35 W. Ohio St., Chicago, Ill. "Marquette."
 Gas-E-Co.—See Gasoline Economy Co.
 Gasoline Economy Co., Colonial Trust Bldg., Philadelphia, Pa. "Gas-E-Co."
 Ged—See Atlas Auto Specialties Corp.
 Greloc—See Grothe Electric Co.
 Grothe Electric Co., 323 Jefferson St., Burlington, Ia. "Greloc."
 Halburn Co., 317 W. Pico St., Los Angeles, Cal. "Jensen."
 Hollowell Bros., 329 W. Pico St., Los Angeles, Cal.
 Humistat—See Tremont Products Co.
 Hydro-Carbon Preventive Co., 3029 Third Ave., New York, N. Y.
 Hydro-Juster—Motor Craft Shops.
 Hydro-Mix—See Planet Mfg. Corp.

Hydrovaporizer—See Accessory Mfg. Sales Co. J-M Oxygenator Co., 1929 E. 46th St., Cleveland, O.

Jensen—See Halburn Co.

K-L—See M-R Mfg. Co.

Lake Sales Co., 1947 Broadway, New York, N. Y. "Lasco."

Lasco—See Lake Sales Co.

M-R Mfg. Co., 2377 O. St., Lincoln, Neb. "K-L."

Mantle & Co., 1907 Park Ave., New York, N. Y. "Pacco."

Manufacturers Distributing Co., Seventh & Pine Sts., St. Louis, Mo. "Wegemann."

Marquette—See Fisher Co.

Motor Craft Shops, 183 Dartmouth St., Boston, Mass. "Hydro-Juster."

No-Nox Co., 13 W. 34th St., New York, N. Y. Northern Automatic Steam Carburetor Co., 927 Second Ave., S., Minneapolis, Minn.

Oxgin-isa—See Puritan Machine Works.

Pacco—See Mantle & Co.

Planet Mfg. Corp., 5088 St. Jean Ave., Detroit, Mich. "Hydro-Mix."
 (See page 649.)

Popp Mfg. Co., M. L., 342-45 3rd Ave., Milwaukee, Wis.

Puritan Machine Works, 7 Hersam St., Stoneham, Mass. "Oxgin-isa."

Redee Mfg. Corp., Minneapolis, Minn.

Reed & Co., P. C., 4535 N. Clark St., Chicago, Ill. "Wonder."

Special Appliance Corp., 366 W. Oak St., Chicago, Ill. (See page 431.)

Speedo, 405 Lexington Ave., New York, N. Y.

Steel Products Co., Rice Lake, Wis. "Vapogas."

Strasburg Mfg. Co., J. L., Albert Lea, Minn. Tankil Chemical Sales Co., 324 High St., Cleveland, O.

Thomas-Armstrong Co., Geneva, N. Y.

Till, William F., 150 Nassau St., New York, N. Y. "Vapor-Humidifier."

Tremont Products Co., 216 High St., Boston, Mass. "Humistat."

Vapogas—See Steel Products Co.

Vapor-Humidifier—See Till, William F.

Victor—See Campbell, V. R.

Water Gas Carburetor Co., 2207 Penn St., Kansas City, Mo.

Weeks Mfg. Co., 421-37 National Ave., Milwaukee, Wis.

Wegemann—See Manufacturers Distributing Co.

Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.

Wonder—See Reed & Co.

Workrite Mfg. Co., 5603 Euclid Ave., Cleveland, O.

MOISTENERS, Air or Mixture, for Fords

(For feeding water into the intake manifold)

Adco—See American Automatic Devices Co.
 Aderholdt Mfg. Co., 1533 Broadway, Denver, Colo. "H-A."
 American Automatic Devices Co., Chicago, Ill. "Adco." (See page 251.)
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Auto Water Pep Co., 2204 S. Michigan Ave., Chicago, Ill.
 Campbell, V. R., 126 Pennsylvania Ave., Elmira, N. Y. "Victor."
 Friestedt Mfg. Co., 234-22 W. Lake St., Chicago, Ill. "Hydroniser."
 Gas-E-Co.—See Gasoline Economy Co.

Everything is listed under the NOUN or principal word

MOISTENERS, Air or Mixture, for Fords (Continued)

Gasoline Economy Co., Colonial Trust Bldg., Philadelphia, Pa. "Gas-M-Co."

H-A—See Aderholdt Mfg. Co.

Hayes-Ederholdt Mfg. Co., Denver, Colo.

Hydronizer—See Priestedt Mfg. Co.

Ideal—See H-O-B Mfg. Co.

J-M Oxygenator Co., 1928 E. 46th St., Cleveland, O.

Till, Wm. F., 150 Nassau St., New York, N. Y.

Victor—See Campbell, V. R.

MOLDED INSULATION—See Composition, Insulating**MOLDS, COMPOSITION, HARD AND SOFT RUBBER—See Dies, Jigs, Tools and Fixtures****MOLDS, Lead**

(Molds for forming burning lead or terminals from scrap)

Ambu—See American Bureau of Engineering. American Bureau of Engineering, 1609 S. Michigan Ave., Chicago, Ill. "Ambu." (See page 147.)

Battery Equipment & Supply Co., 1458 Michigan Ave., Chicago, Ill. "H. B." (See page 823.)

Camold—See Campbell Engineering Corp. Campbell Engineering Corp., 1529-31 Wyandotte St., Kansas City, Mo. "Camold."

Colgan Co., J. W., 4 Alden Ct., Boston, Mass. Cramer Storage Battery Co., 508 Wyoming Ave., Scranton, Pa.

Eureka—See Kukac Mold Mfg. Co.

H. B.—See Battery Equipment & Supply Co. Kukac Mold Mfg. Co., 2339 S. St. Louis Ave., Chicago, Ill. "Eureka."

Orum, S. R. M. (North Philadelphia), Philadelphia, Pa.

R. & N.—See Randall & Noll.

Randall & Noll, 317 S. 11th St., Lincoln, Neb. "R. & N."

Shonts Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (Metropolitan Distributor for "Ambu" Molds.) (See page 151.)

Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa.

MOLDS and CORES, Tire Vulcanizing

Akron Rubber Mold & Machine Co., 917 Switzer Ave., Akron, O.

Bridgewater Machine Co., 81-87 Cherry St., Akron, O.

Brown Mfg. Co., Jesse F., 2652 Long Beach Ave., Los Angeles, Cal.

Caldwell Co., L. L., 2405 S. Main St., Los Angeles, Cal. "Pacific," "Hammer."

Claflin Engineering Co., Lancaster, O.

DeMattia Bros., River Rd. & Prescott Ave., Garfield, N. J.

Derby Tire Co., 2909-11 Nicollet Ave., Minneapolis, Minn.

Duncan Co., F. M., 114 E. Ohio St., Chicago, Ill.

Fredd's Vulcanizing Plant, 425 Michigan St., Hancock, Mich.

Giant—See Haywood Tire & Equipment Co. Haywood Tire & Equipment Co., 1236 N. Capitol Ave., Indianapolis, Ind.

Hammer—See Caldwell Co.

I. X. L. Tire Builders Equipment Co., Peoria Life Bldg., Peoria, Ill.

Kuhke Machine Co., 43-53 W. Exchange St., Akron, O.

Legnard Co., A. B., Waukegan, Ill. "Vulcan."

Miller, Chas. E., Anderson, Ind.

Milwaukee Auto Specialty Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium."

National Rubber Mold Co., 2763 Blake St., Denver, Colo.

Pacific—See Caldwell Co.

Phoenix Tire & Rubber Co., 1614 S. Michigan Ave., Chicago, Ill.

Radium—See Milwaukee Auto Specialty Co.

Redex—See Rubber Products & Machinery Co.

Reynolds Machine Co., N. West St., Massillon, Ohio

Rubber Products & Machinery Co., 225 E. Ninth St., Los Angeles, Cal. "Redex."

Sears Tire Equipment Co., Davenport, Ia. (See page 595.)

Smith One-Heat System, Cedar & Emerick Sts., South Bend, Ind.

Sturgis Tire & Rubber Co., Oakland, Cal.

Summit Mold & Machine Co., 1022-24 S. High St., Akron, O.

Thropp's Sons Co., John E., Trenton, N. J.

Utility Tire Machinery Co., 401 Penn Ave., Joplin, Mo.

Vulcan—See Legnard Co.

Western Rubber Mold Co., 243 N. Crawford Ave., Chicago, Ill.

Wilkinson-Beaver Mfg. Co., St. Louis, Mo.

Williams Foundry & Machine Co., 100 Walnut St., Akron, O.

Zwebel Bros. Co., 482 Milwaukee St., Milwaukee, Wis.

MOLYBDENUM, Ferro

Climax Molybdenum Co., 61 Broadway, New York, N. Y.

Vanadium Corp. of America, Equitable Bldg., New York, N. Y.

MONKEY WRENCHES—See Wrenches, Nut and Bolt**MONOGRAMS, DECALCOMANIA — See Transfers, Decalcomania****MONOGRAMS, Ornamental Metal**

Autograms—See Wood-Detroit Mfg. Co.

Bernard Co., J., 423-30 E. 53d St., New York, N. Y.

Colgan Co., J. W., 4 Alden Ct., Boston, Mass.

Creutz Plating Co., Fifth & Elm Sts., Cincinnati, O.

Crowe Name Plate & Engraving Co., 1749 Grace St., Chicago, Ill.

Dickson, James, 333 S. Clinton St., Chicago, Ill.

Essex, C. F., 18428 97th Ave., Richmond Hill, N. J.

Greenduck Co., Van Buren & Hoyne Aves., Chicago, Ill.

Handel Co., Louis, 128 Center St., New York, N. Y.

Hiscock Mfg. Co., 39 N. Water St., Rochester, N. Y.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Everything is listed under the NOUN or principal word

MONOGRAMS, Ornamental Metal (Continued)

Johnston Co., J. G., 79 Sudbury St., Boston, Mass.
 Matthews & Co., Jas. H., 1537 Forbes Field, Pittsburgh, Pa.
 Mulhaupt, F. Jos., 227 N. Fifth St., Lafayette, Ind.
 Murdock Co., W. James, 116 Opera Pl., Cincinnati, O.
 New York Stencil Works, 100 Nassau St., New York, N. Y.
 Salman, John A., 110 Tremont St., Boston, Mass.
 Schwerdtle Stamp Co., 45 Cannon St., Bridgeport, Conn.
 Stafford Co., N., 67 Fulton St., New York, N. Y.
 Vego Hair Mfg. Co., Palatka, Fla.
 Walter & Sons, N. C., 3 Park Row, New York, N. Y.
 Whiteford & Co., Jos. G., 165 N. Jefferson St., Chicago, Ill.
 Wood-Detroit Mfg. Co., Marquette Bldg., Detroit, Mich. "Autograms."

MONOGRAMS, RADIATOR—See Monograms, Ornamental

MORTISING MACHINES—See Machines, Wood Mortising

MOSS, Upholstery

(For use instead of Hair; for Hair—See Hair, Upholstery; for Upholstery, Felt—See Felt Upholstery)

American Moss Products Corp., 300 Fifth Ave., New York, N. Y. "Amproco."
 Amproco—See American Moss Products Co.
 Babin, Luke B., Moss St., White Castle, La. "Babinmoss."
 Babinmoss—See Babin, Luke B.
 Crescent City Moss Ginnery Co., Lopez & Perdido Sts., New Orleans, La.
 Kohlmann Moss & Cotton Felt Mfg. Co., 411 Magazine St., New Orleans, La.
 Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)
 Schwing Co., R. I., Plaquemine, La.
 Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.
 Sutherland Leather & Felt Co., 139 Beaubien St., Detroit, Mich.
 Woll & Sons Mfg. Co., Moscher & Berks Sts., Philadelphia, Pa.

MOTION RECORDERS—See Recorders, Vehicle

MOTOR ATTACHMENTS—See Wheels, Motor

MOTOR COMMUTATORS—See Commutators, Electric Motor

MOTOR CONTROLLERS—See Controllers, Electric Motor

MOTOR DECARBONIZING MACHINES—See Machines, Engine Decarbonizing

MOTOR DRIVEN SAW BENCHES—See Benches, Motor Driven Saw

MOTOR GENERATORS—See Dynamos, and Motor Generators

MOTOR HEAT SEALS—See Seals, Motor Heat

MOTOR HOODS—See Hoods, Engine

MOTOR RACKS—See Racks, Engine

MOTOR REPAIR STANDS—See Stands, Engine Repair

MOTOR TESTING INSTRUMENTS—See Instruments, Engine Testing

MOTOR TRUCKS—See Section I

MOTOR WHEELS—See Wheels, Motor

MOTORISTS' AXES—See Axes, Motorists

MOTORISTS' HATCHETS—See Axes, Motorists

MOTORS, Electric Automobile

Diehl Mfg. Co., Trumbull & Second Sts., Elizabethport, N. J.
 General Electric Co., Schenectady, N. Y. (See page 697.)
 Lincoln Electric Co., 38th St. & Kelley Ave., N. E., Cleveland, O.
 Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)

MOTORS, GASOLINE AUTOMOBILE—See Engines, Automobile Gasoline

MOTORS, STEAM—See Engines, Steam

MOULDING, BODY—See Moulding, Brass; also Moulding, Steel

MOULDING, BRASS

American Brass Co., Waterbury, Conn. (See page 161.)
 Auto Moulding & Mfg. Co., 1926-28 S. Wabash Ave., Chicago, Ill. "Autom."
 Autom—See Auto Moulding & Mfg. Co.
 Bridgeport Brass Co., Bridgeport, Conn.
 Columbus Brass Co., 640 Dublin Ave., Columbus, O.
 Cowles & Co., C., New Haven, Conn. (See page 451.)
 Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Jonah & George, Little's Ct., Merrimac, Mass.
 Manhattan Brass Co., 238 E. 28th St., New York, N. Y.
 Metal Stamping Co., Long Island City, N. Y. (See page 168.)
 Morton Mfg. Co., 5135-39 W. Lake St., Chicago, Ill. (See page 911.)
 Randolph-Clowes Co., 334 Bank St., Waterbury, Conn.
 Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Smith Wire & Iron Works, F. P., 2340-48 Clybourne Ave., Chicago, Ill.
 Spiro Mfg. Co., C. 68-72 E. 131st St., New York, N. Y. "Uniq."
 Ten Elek, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)

Everything is listed under the NOUN or principal word

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Stampings Windshields Foot Rails

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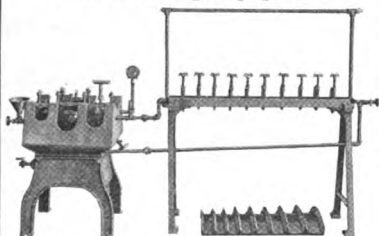
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IRVINGTON, NEW JERSEY

Specialty Manufacturers

**Service, Workmanship, Material
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The automotive merchant, garageman and service manager, like any other business man, has only so much time to give to a study of contemporary happenings in his trade.

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MOTOR AGE

MALLERS
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Please mention The Automobile Trade Directory

MOULDING, BRASS (Continued)

Uniq—See Spiro Mfg. Co.
 White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 595.)

MOULDING, Flexible Leather

Anchor—See Indianapolis Saddlery Co.
 Carter Co., George R., Connersville, Ind.
 Indianapolis Saddlery Co., 237 S. Meridian St., Indianapolis, Ind. "Anchor."
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 595.)

MOULDING, LEATHER — See Moulding, Flexible Leather**MOULDING, Running Board**

(See also Moulding, Brass; also Moulding, Steel)

Allite—See Zenite Metal Co.
 Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Auto Moulding & Mfg. Co., 1926-28 S. Wabash Ave., Chicago, Ill. "Autom."
 Autom—See Auto Moulding & Mfg. Co.
 Bridgeport Brass Co., Bridgeport, Conn.
 Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Erdle Perforating Co., 171 York St., Rochester, N. Y. (See page 579.)
 Higgins Mfg. Co., Newport, Ky.
 Kawneer Mfg. Co., 331 Front St., Niles, Mich.
 Merts Mfg. Co., John, Water & Decatur Sts., Sandusky, O.
 Merton Mfg. Co., 5133-39 W. Lake St., Chicago, Ill. (See page 911.)
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Spiro Mfg. Co., C., 65-72 E. 131st St., New York, N. Y. "Uniq."
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Uniq—See Spiro Mfg. Co.
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. "Allite." (See page 595.)

MOULDING, Steel

Auto Moulding & Mfg. Co., 1926-28 S. Wabash Ave., Chicago, Ill. "Autom."
 Autom—See Auto Moulding & Mfg. Co.
 Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.
 Empire Art Metal Co., College Point, N. Y.
 Kawneer Mfg. Co., 331 Front St., Niles, Mich.
 Merton Mfg. Co., 5133-39 W. Lake St., Chicago, Ill. (See page 911.)
 Perfection Metal Products Co., College Point, N. Y.
 Spiro Mfg. Co., C., 65-72 E. 131st St., New York, N. Y. "Uniq."
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Uniq—See Spiro Mfg. Co.

MOUNTING ATTACHMENTS, MAGNETO — See Attachments, Magneto Mounting**MOVEMENT RECORDERS—See Recorders, Vehicle****MUD DEFLECTORS, for Fords—See Fenders, Radiator Splash****MUD GUARD ANTI-RATTLERS, for Fords—See Braces, Mud Guard****MUD GUARD BRACES, for Fords—See Braces, Mud Guard****MUD GUARD CLAMPS, for Fords—See Braces, Mud Guard****MUD GUARD SILENCERS, for Fords—See Braces, Mud Guard****MUD GUARDS—See Fenders or Mud Guards****MUD HOOKS—See Chains or Grips, Non-Skid****MUFFLER CUT-OUT PEDALS—See Pedals, Horn****MUFFLER CUT-OUTS—See Valves, Muffler Cut-out****MUFFLER PAINTS—See Paints, Exhaust Pipe****MUFFLER SHELLS—See Shells, Muffler for Fords****MUFFLERS, Exhaust**

Buffalo Pressed Steel Co., Buffalo, N. Y.
 Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."
 Ejector—See Dunkirk Corp.
 El Dorado—See Jones Auto Muffler Co.
 Emco Mfg. Co., Binghamton N. Y. "Taber," "Solo."
 Ever Clean—See Miller & Co.
 Fairchild & Co., Jas. E., 39 W. Boston Post Rd., Mamaroneck, N. Y.
 G. P. & F.—See Gauder, Paeschke & Frey Co.
 Gauder, Paeschke & Frey Co., 1265-1700 St. Paul Ave., Milwaukee, Wis. "G. P. & F.," "Maxim." (See page 843.)
 Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., Detroit, Mich.
 Hersh & Bro., 657 Mill St., Allentown, Pa.
 International Steel Products Co., Hartford, Wis. "Uvee."
 Jones Auto Muffler Co., 65 Boston Post Rd., Mamaroneck, N. Y. "El Dorado."
 Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 377.)
 Maxim—See Gauder, Paeschke & Frey Co.
 Michigan Stamping Co., 11681 Mack Ave., Detroit, Mich.
 Miller & Co., Spring Valley, Ill. "Ever Clean."
 Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.

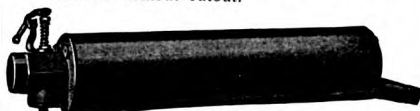
Everything is listed under the NOUN or principal word

OLDBERG MUFFLERS



Model C

Outside diameter, 4 $\frac{5}{8}$ ". Length optional to 24". Tube sizes up to 2" O. D. Supplied with or without cutout.



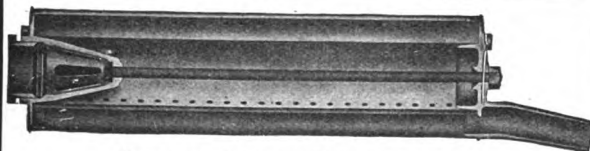
Model D

Outside diameter, 4 $\frac{5}{8}$ ". Length optional to 24". Tube sizes up to 2 $\frac{1}{2}$ " O. D. Supplied with or without cutout.

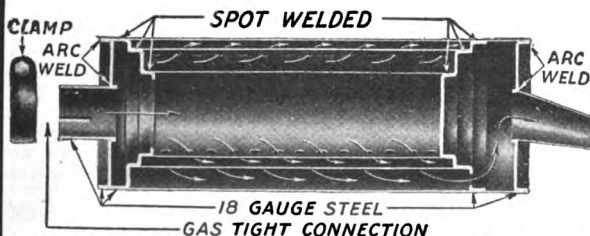


Model E

Outside diameter, 6 $\frac{1}{4}$ ". Length optional to 30". Tube sizes up to 2 $\frac{3}{4}$ " O. D. Supplied with or without cutout.



Interior Construction of Models C, D and E



COMPLETELY WELDED, NO BOLTS, RIVETS OR CRIMPING

Interior Construction of Pressed Steel Mufflers

Outside diameters, 5", 6" and 7". Length optional to 28".
Tube sizes, 1 $\frac{1}{2}$ " up to 3". No cutout.

Special Interchangeable Size for Ford Cars

SPECIAL SERVICE

A few of the most popular standard Oldberg Models are shown here-with, which cover practically every ordinary requirement for passenger car, truck or tractor equipment. We also supply many other sizes of standard construction from stock, or are in position to make up to your order any

special exterior construction or fitting to facilitate proper and easy installation. Free samples and quotations to manufacturers.

**OLDBERG
MFG. CO.**

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MICHIGAN**

LARGEST EXCLUSIVE MUFFLER MANUFACTURERS

Please mention The Automobile Trade Directory

MUFFLERS, Exhaust (Continued)

Multijector—See Reid, David.
Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
Oldberg Mfg. Co., Detroit, Mich. (See page 597.)
Powell Muffler Co., Utica, N. Y. (See page 601.)
Reid, David, 25 Liberty St., Buffalo, N. Y. "Multijector."
Solo—See Emco Mfg. Co.
Taber—See Emco Mfg. Co.
Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 909.)
Uvee—See International Steel Products Co.
Vacuum Muffler Corp. of America, 220 Fifth St., Bridgeport, Conn.
Yankee Co., 69 Genesee St., Utica, N. Y.
York Corrugating Co., York, Pa. (See page 377.)

MUFFLERS, Exhaust, for Fords

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
Buffalo Pressed Steel Co., Buffalo, N. Y. "Bupresco."
Bupresco—See Buffalo Pressed Steel Co.
Canton Co., A. S., 174 Franklin St., New York, N. Y.
Cuthbert-Freidberg Mfg. Co., New Brunswick, N. J.
Darb—See Fort Dearborn Mfg. Co.
Dunham Co., Thos., Aurora, Ill. (See page 145.)
Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."
Ejector—See Dunkirk Corp.
El Dorado—See Jones Auto Muffler Co.
Emco Mfg. Co., Binghamton, N. Y. "Taber."
Ever Clean—See Miller & Co.
Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.
Fort Dearborn Mfg. Co., Sterling, Ill. "Darb."
Geneco Mfg. Co., 646 S. Pierce St., Milwaukee, Wis. (See page 107.)
Gauder, Paeschke & Frey Co., 1265-1700 St. Paul Ave., Milwaukee, Wis. "Maxim." (See page 843.)
Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.
Jones Auto Muffler Co., 65 Boston Post Rd., Mamaroneck, N. Y. "El Dorado."
Lawco—See Lawson Co.
Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawco." (See page 377.)
M. & P.—See Messenger & Parks Mfg. Co.
Maxim—See Gauder, Paeschke & Frey Co.
Messenger & Parks Mfg. Co., Aurora, Ill. "M. & P."
Miller & Co., Spring Valley, Ill. "Ever Clean."
Multijector—See Reid, David.
Oldberg Mfg. Co., Detroit, Mich. (See page 597.)
Powell Muffler Co., Utica, N. Y. (See page 601.)
Reid, David, 25 Liberty St., Buffalo, N. Y. "Multijector."
Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
Taber—See Emco Mfg. Co.

Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 909.)

Vacuum Muffler Corp. of America, 220 Fifth St., Bridgeport, Conn.
Yankee Co., 69 Genesee St., Utica, N. Y.

MUFFLERS, EXHAUST TRACTOR—See Mufflers, Tractor Exhaust

MUFFLERS, Throat

(See also Clothing, Motorists)

Bradley Knitting Co., Delevan, Wis.

MUFFLERS, Tractor Exhaust

Buffalo Pressed Steel Co., Buffalo, N. Y. "Bupresco."
Bupresco—See Buffalo Pressed Steel Co.
Darb—See Fort Dearborn Mfg. Co.
Dunkirk Corp., 12-16 E. Second St., Dunkirk, N. Y. "Ejector."
Ejector—See Dunkirk Corp.
Fairchild & Co., Jas. E., 89 W. Boston Post Rd., Mamaroneck, N. Y.
Fort Dearborn Mfg. Co., Sterling, Ill. "Darb."
Gauder, Paeschke & Frey Co., 1265-1700 St. Paul Ave., Milwaukee, Wis. "Maxim." (See page 843.)
Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E., Detroit, Mich.
Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawco." (See page 377.)
Maxim—See Gauder, Paeschke & Frey Co.
Multijector—See Reid, David.
Oldberg Mfg. Co., Detroit, Mich. (See page 597.)
Powell Muffler Co., Utica, N. Y. (See page 601.)
Reid, David, 25 Liberty St., Buffalo, N. Y. "Multijector."
Vacuum Muffler Corp. of America, 220 Fifth St., Bridgeport, Conn.
Wear Co., 533-30th St., Milwaukee, Wis. (See page 505.)

MULTIPLE SPINDLE DRILLS—See Drills, Multiple Spindle

NAILS, UPHOLSTERY—See Tacks, Upholstery

NAME PLATES—See Plates, Name

NATURAL LEATHER—See Leather, Natural

NEEDLE VALVES—See Valves, Needle

NICKEL STEEL—See Steel, Nickel

NIPPERS—See Pliers, Combination

NIPPLES, PIPE—See Fittings, Pipe

NIPPLES, PUMP—See Connections, Tire Pump

NON-DEMOUNTABLE WIRE WHEELS—See Wheels, Non-Demountable Wire

NON-EXPLOSIVE TANK FILLING TUBES—See Tubes, Non-Explosive Tank Filling

Everything is listed under the NOUN or principal word

NON-FREEZING COMPOUNDS—See Compounds, Anti-Freezing

NON-SKIDS, TIRE—See Bands, Non-Skid; also Chains or Grips; also Treads, Tire; also Boxes, Sand

NOTICES, Collection

Sayers Cabinet Mfg. Co., 2801 Sheffield Ave., Chicago, Ill. (See page 591.)

NOZZLES, Air Upholstery Cleaning

Romort Mfg. Co.—See Zinke Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.) (See pages 772 and 773.)

NUMBER HOLDERS—See Holders, License

NUMBERS or HANGERS, License

(For License Holders—See Holders, License)

Aluminum Goods Mfg. Co., 15th & Franklin Sts., Manitowish, Wis.

Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.

Niagara Metal Stamping Corp., 235-47 Tenth St., Niagara Falls, N. Y. "Premax."

Premax—See Niagara Metal Stamping Corp.

Sachs-Lawler Co., 1543 Lorimer St., Denver, Colo.

Shonk Works, Maywood, Ill.

Stafford Co., N., 67 Fulton St., New York, N. Y.

Whiteford & Co., Jos. G., 165 N. Jefferson St., Chicago, Ill.

NUMBERS, STEEL—See Stamps, Steel

NUT WRENCHES—See Wrenches, Nut and Bolt

NUTS, CASE HARDENED—See Nuts, Finished

NUTS, Castellated

Aetna Screw & Bolt Co., 213 N. Desplaines St., Chicago, Ill.

Atlas Bolt & Screw Co., Cleveland, O. (See page 745.)

Automatic Screw Machine Products Co., 3425 W. 31st St., Chicago, Ill.

Brightman Mfg. Co., Marion Rd., Columbus, O.

Brightman Nut & Mfg. Co., Sandusky, O. (See page 613.)

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 499 and 743.)

Cincinnati Screw Co., Twilight, O. (See page 735.)

Clark Bros. Bolt Co., Milford, Conn.

Columbia Nut & Bolt Co., Railroad Ave., Bridgeport, Conn.

D. W. F. Engineering Co., 69 Sprague St., Providence, R. I.

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Erie Specialty Co., Erie, Pa.

Eze-Way—See Kauffman Metal Products Co.

Federal Screw Works, 4735 Ellery St., Detroit, Mich.

Gordon-Little Co., 122-24 N. Senate Ave., Indianapolis, Ind.

Graham Nut Co., 1317-19 W. Carson St., Pittsburgh, Pa.

Hagen Metal Products Co., 117 Bowen Ave., St. Louis, Mo.

Hartford Machine Screw Co., Hartford, Conn. (See page 741.)

Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill.

Hykias—See Parts Service Co.

Kauffman Metal Products Co., Bellefontaine, O. "Eze-Way." (See page 359.)

Milton Mfg. Co., Milton, Pa.

Namco—See National Acme Co.

National Acme Co., Cleveland, O. "Namco." (See page 601.)

National Bolt & Nut Co., 62nd St. & A. V. R. R.; Pittsburgh, Pa.

National Lock Co., Rockford, Ill.

National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.

New Haven Screw Co., 191-93 Foster St., New Haven, Conn.

P. & C. Nut Co., 519 Water St., Jackson, Mich.

Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hykias." (See page 149.)

Phoenix Mfg. Co., Grand River at Loraine, Detroit, Mich. (See page 725.)

Rhode Island Tool Co., Providence, R. I.

Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.

St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.

Sandusky Nut Co., 122 Laurence St., Sandusky, O.

Sherman-Klove Co., 4640-48 W. Harrison St., Chicago, Ill. (See page 743.)

U. S. Automatic Co., Amherst, O.

Western Automatic Machine Screw Co., Elyria, O.

Western Screw-Products Co., St. Louis, Mo. (See page 749.)

Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 729.)

Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

NUTS, Finished and Case Hardened

Atlas Bolt & Screw Co., Cleveland, O. (See page 745.)

Brightman Mfg. Co., Marion Rd., Columbus, O.

Brightman Nut & Mfg. Co., Sandusky, O. (See page 613.)

C A D—See Standard Shop Equipment Co.

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 499 and 743.)

Cincinnati Screw Co., Twilight, O. (See page 735.)

Clark Bros. Bolt Co., Milford, Conn.

Columbia Nut & Bolt Co., Railroad Ave., Bridgeport, Conn.

Columbus Bolt Works Co., Columbus, O. (See page 147.)

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Erie Specialty Co., Erie, Pa.

Falls Rivet Co., Kent, O.

Foster Bolt & Nut Mfg. Co., 5556 E. 73d St., Cleveland, O. "Perfection."

Everything is listed under the NOUN or principal word

NUTS, Finished and Case Hardened (Continued)

- Garland Mfg. Co. (W. Pittsburgh.), Pittsburgh, Pa.
Hartford Machine Screw Co., Hartford, Conn. (See page 741.)
Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
Hyklas—See Parts Service Co.
Michigan Bolt & Nut Works, ft. Meldrum Ave., Detroit, Mich.
Milton Mfg. Co., Milton, Pa.
Namco—See National Acme Co.
National Acme Co., Cleveland, O. "Namco." (See page 601.)
National Bolt & Nut Co., 62d St. & A. V. R. R., Pittsburgh, Pa.
National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.
National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
New Haven Screw Co., 191-93 Foster St., New Haven, Conn.
Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 149.)
Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
Peninsular Products Co., Detroit, Mich. (See page 629.)
Perfection—See Foster Bolt & Nut Mfg. Co.
Phoenix Mfg. Co., Grand River at Loraine, Detroit, Mich. (See page 725.)
Pittsburgh Screw & Bolt Co., Preble Ave. (N. E.), Pittsburgh, Pa.
Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
Rhode Island Tool Co., Providence, R. I.
Russell, Burdett & Ward Bolt & Nut Co., Port Chester, N. Y.
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Sandusky Nut Co., 122 Laurence St., Sandusky, O.
Sherman-Klove Co., 4640-48 W. Harrison St., Chicago, Ill. (See page 743.)
Standard Shop Equipment Co., 23rd & Hunting Park Ave., Philadelphia, Pa. "C A D."
Upson-Nort Co., Unionville, Conn.
U. S. Automatic Co., Amherst, O.
Western Automatic Machine Screw Co., Elyria, O.
Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 729.)
Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

NUTS, HARDENED—See Nuts, Finished

NUTS and WASHERS, Lock

- Absolute—See American Lock-Nut Co.
American Lock-Nut Co., 122 S. Michigan Ave., Chicago, Ill. "Absolute."
American Nut & Bolt Fastener Co., 3 Ontario St., Pittsburgh, Pa.
Andrix Lock-Nut Co., Locust & Michigan Sts., Adrian, Mich.
Arghis & Co., E. J., 74 Wall St., New York, N. Y. "Evans."
Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.
Bull Dog Lock Washer Co., 269 S. Seventh St., Baltimore, Md.
Cincinnati Screw Co., Twilight, O. (See page 735.)
Cincinnati Screw & Tap Co., 2442 Beekman St., Cincinnati, O.

- Columbia Nut & Bolt Co., Railroad Ave., Bridgeport, Conn. "Gib."
Drake Lock Nut Co., 7413 Stanton Ave., Cleveland, O.
Evans—See Arghis & Co.
Gib—See Columbia Nut & Bolt Co.
Hidalgo Steel Co., 253 Broadway, New York, N. Y. "Shekleton."
Hipower—See National Lock Washer Co.
Hobbs Mfg. Co., 26 Salisbury St., Worcester, Mass. (Sole Distributors for O. K. Nut Lock Co., Providence, R. I.)
Hold-Tite—See Nutlock Corp.
Holdfast Nut & Bolt Co., 134 S. La Salle St., Chicago, Ill.
Industrial Mfg. Corp., 184 Heard St., Worcester, Mass.
Keystone—See Positive Lock Washer Co.
Mansfield Lock Washer Co., 230 N. Adams St., Mansfield, O.
National Lock Washer Co., 40 Harmon St., Newark, N. J. "Hipower."
National Umbrella Frame Co., 30th & Thompson Sts., Philadelphia, Pa. "Never-Slip." (See page 939.)
Never Slip—See National Umbrella Frame Co.
Nutlock Corp., 30 Church St., New York, N. Y. "Hold-Tite."
O. K. Nut Lock Co.—See Hobbs Mfg. Co.
Painot Corp., 1400 Niagara St., Buffalo, N. Y.
Positive Lock Washer Co., Newark, N. J. "Keystone." (See page 937.)
Positive Lock & Bolt Co., Cleveland, O. "Stevenson."
Quadrige Mfg. Co., 213-31 W. Grand Ave., Chicago, Ill.
Reliance Mfg. Co., Massillon, O. (See page 937.)
Saller & Melvin Mfg. Co., rear N. Grant St., Massillon, O.
Schum Bros., 1 Madison Ave., New York, N. Y.
Selflock Nut & Bolt Co. (E. Syracuse), Syracuse, N. Y.
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Shekleton—See Hidalgo Steel Co.
Smith & Hemenway, 130 Colt St., Irvington, N. J.
Stevenson—See Positive Lock & Bolt Co.
Torsion Nut-Lock & Washer Co., 11 Central St., Boston, Mass.
Wire Goods Co., 28 Union St., Worcester, Mass.

NUTS, Thumb or Wing

- Atlas Bolt & Screw Co., Cleveland, O. (See page 745.)
Chicago Nut Co., 2513-39 W. 20th St., Chicago, Ill.
Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 499 and 743.)
Clark Bros. Bolt Co., Milldale, Conn.
Cleveland Wrought Products Co., W. 58th St., South of Denison, Cleveland, O.
Columbus Bolt Works Co., Columbus, O. (See page 147.)
Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
Peninsular Products Co., Detroit, Mich. (See page 629.)
St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
Upson Nut Co., Unionville, Conn.
Western Automatic Machine Screw Co., Elyria, O.
Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

Everything is listed under the NOUN or principal word

STANDARD S. A. E. & U. S.
SCREWS and NUTS
CARRIED IN STOCK

Specials Made to Specifications

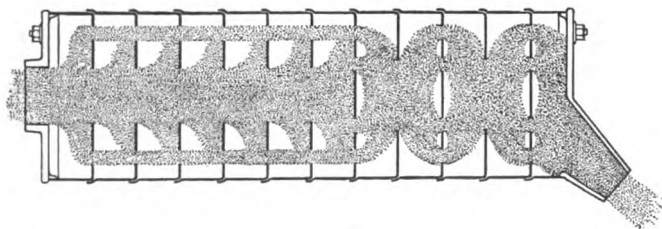
Special Milled Screw Machine Work made from Iron, Steel and Brass Bars to samples or blueprints. Full equipment for hardened and ground work. Capacities up to 4 in. diameter.

The National Acme Company

CLEVELAND, OHIO MONTREAL, P. Q.

Branch Offices: New York, Chicago, Boston, Detroit, Buffalo.

Warehouses: New York, 77 White St.; Chicago, 559 W. Washington Blvd. Southern Representatives: V. A. Moore & Co., Atlanta, Healy Bldg. Pacific Coast Representatives: Hughson & Merton, San Francisco, Los Angeles, Portland, and Seattle.



POWELL MUFFLERS

WHY are they used by over 40 of the leading automobile and truck companies? They will not blow up, leak or rattle; no small holes to plug with carbon oil; easy to take apart and clean. Malleable iron heads, steel sections through the center. All sizes in stock.

POWELL MUFFLER COMPANY
UTICA, NEW YORK

Please mention The Automobile Trade Directory

NUTS, WING—See Nuts, Thumb or Wing
ODOMETERS OR DISTANCE METERS—
 See Meters, Distance Recording
OIL ALARMS—See Alarms, Low Oil
OIL CAN HOLDERS—See Holders, Oil
 Can; also Holders, Oil Barrel and Can
OIL CAN TIPPERS—See Holders, Oil Barrel
 and Can
OIL CANS—See Cans, Oiling

OIL, Castor

A-A—See Baker Castor Oil Co.
 Baker Castor Oil Co., 130 Broadway, New
 York, N. Y. "A-A."

OIL CLARIFIERS—See Separators, Oil
OIL COCK WRENCHES FOR FORDS—See
 Wrenches, Oil Cock
OIL CUPS—See Cups, Oil and Grease

OIL DEFLECTORS FOR FORDS—See De-
 flectors, Oil

OIL FILLER PUMPS—See Tanks and Sys-
 tems, Oil

OIL FILTERS—See Filters, Oil

OIL FUNNELS—See Funnels and Meas-
 ures, Metal

OIL GAGES—See Gages, Oil Pressure

OIL GAGES FOR FORDS—See Gages, Oil

OIL GUARDS FOR FORDS—See Guards,
 Oil

OIL GUNS—See Guns, Oil

OIL HOLE COVERS—See Covers, Oil Hole

OIL LAMPS—See Lamps, Oil

OIL MEASURES—See Funnels and Meas-
 ures, Metal

OIL METERS—See Meters, Gasoline or Oil

OIL PRESSURE GAGES—See Gages, Oil

OIL PUMPS—See Lubricators

OIL PURIFIERS—See Purifiers, Oil

OIL RECORDERS—See Recorders, Gasoline
 and Oil

OIL RETAINING RINGS—See Washers, Felt

OIL SEPARATORS—See Separators, Oil

OIL SYSTEMS—See Tanks & Systems, Oil

OIL TANKS—See Tanks & Systems, Oil

**OIL TEMPERATURE INDICATING ME-
 TERS**—See Meters, Oil Temperature
 Indicating

OIL TEMPERING—See Treating Heat

OIL TEST COCKS FOR FORDS—See
 Gages, Oil

OIL TUBE VALVES FOR FORDS—See
 Valves, Oil Tube

OILERS, CUP—See Cups, Oil and Grease

OILERS, ENGINE—See Lubricators

OILERS, SPRING LEAF—See Cups, Spring
 Leaf Lubricating; also Strips, Spring Leaf
 Lubricating; also Tools, Spring Leaf Sep-
 arating

OILERS, SQUIRT—See Cans, Oiling

OILING BOXES—See Cups, Spring Leaf
 Lubricating

OILS, CUTTING—See Lubricants, Cutting

OILS, CYLINDER—See Oils, Lubricating

OILS, GEAR—See Oils, Lubricating; also
 Greases

OILS, Lubricating

A-B-C—See Layton Park Oil & Soap Co.
 Acheson Products—See Cassidy Co.
 Advance—See Lynch, Alonzo K.
 Aerul—See Swan & Finch Co.
 Albany—See Cook's Sons.
 Alexander & Co., H. T., 17 Battery Pl., New
 York, N. Y. "Grand Prix."
 All-In-One—See Scientific Mfg. Co.
 Allegheny—See Roseberg Oil Co.
 Amalee—See Sonneborn Sons.
 American Oil Co., American Bldg., Baltimore,
 Md. "Eze-Lube," "Amoco."
 American Oil Corp., S. Water St., Jackson,
 Mich. "Jaxonoil."
 Amoco—See American Oil Co.
 Aristo—See Union Oil Co. of California.
 Atlas—See Swan & Finch Co.
 Aurora—See Pigot-Sayre Co.
 Auto Oil Co., 172 S. Water St., Jackson, Mich.
 Autocrat—See Bayerson Oil Works.
 Autoline—See Robinson & Son Co.
 Balkan—See Jones & Bro.
 Balso Oil Co., 238 N. Erie St., Toledo, O.
 Banner—See Clarkson & Ford Co.
 Baum's Castorine Co., 104 N. George St.,
 Rome, N. Y.
 Bayerson Oil Works, E. 12th St. & P. R. R.,
 Erie, Pa. "Autocrat," "Parolene," "Ruby."
 Belden & Co., A. G., 29 Burling Slip, New
 York, N. Y. "Valvone," "Pyonoleum."
 Berry's Sons, Jas. L., 11 Broadway, New
 York, N. Y.
 Bliven & Carrington, 29 Moore St., New York,
 N. Y. "Champion."
 Blue Ribbon—See Sawyer Oil Co.
 Bock & Co., Harry E. Book Bldg., Detroit,
 Mich. (Sole Distributors for Bayerson Oil
 Works, Erie, Pa. "Autocrat," "Parolene,"
 "Ruby.")
 Borne, Scrymser Co., 30 South St., New York,
 N. Y. "Colonial," "Globe."
 Bull Dog—See Climax Western Oil Co.
 Calypso—See Swan & Finch Co.
 Carbo Petro Works, 1276 W. Third St., Cleve-
 land, O.
 Carolene—See Valley Oil Co.

Everything is listed under the NOUN or principal word

OILS, LUBRICATING (Continued)

- Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for Acheson Products, Niagara Falls, N. Y. "Oil-dar.")
- Clarkson & Ford Co., 55 Water St., New York, N. Y. "Banner."
- Climax Western Oil Co., 2324 Tenth Ave., S., Minneapolis, Minn. "Bull dog."
- Colgan Mfg. & Supply Co., 115 Maiden Lane, New York, N. Y. "Reliable."
- Colonial—See Horne, Scrymser Co.
- Colorado Lubricating Co., 1723 Wasee St., Denver, Colo. "Lubrolene."
- Columbia Refining Co., 90 West St., New York, N. Y.
- Conn-O-Co—See Connecticut Oil Co.
- Connecticut Oil Co., 549 S. Leonard St., Waterbury, Conn. "Conn-O-Co."
- Cook's Sons, Adam, 708-10 Washington St., New York, N. Y. "Albany."
- Crane & Co., L. M., 91 Oliver St., Boston, Mass. "Eureka."
- Crawford Co., Wm. J., 9 Wood St., Pittsburgh, Pa.
- Crew Levick Co., 111 N. Broad St., Philadelphia, Pa. "Perfection."
- Crown—See Swan & Finch Co.
- Crown—See Great Western Oil Co.
- Crudeline—See Reighard Oil Co.
- Crum Mfg. Co., 815 E. Second St., Wichita, Kans. "No-Squeak."
- Crystal Oil & Paint Co., 6500 Detroit Ave., Cleveland, O.
- Crystalline—See Kentucky Consumers Oil Co.
- Culco—See Culmer Chemical Co.
- Culmer Chemical Co., 210 North St., Independence, Kans. "Culco."
- Currola—See Curry Bros. Oil Co.
- Curry Bros. Oil Co., 253-55 Franklin St., Boston, Mass. "Currola," "Superba," "Unity."
- Dearborn Chemical Co., 333 S. Michigan Ave., Chicago, Ill.
- Defiance—See Waverly Oil Works Co.
- Duffy Oil & Grease Co., 505 W. 45th St., New York, N. Y.
- Duplex—See Enterprise Oil Co.
- Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
- Eagle Oil & Supply Co., 45 India St., Boston, Mass. "Eagleline."
- Eagleline—See Eagle Oil & Supply Co.
- Econo-Lub—See Middle States Oil Co.
- Economy—See Street & Co.
- Emco—See Emery Mfg. Co.
- Emery Mfg. Co., 43 Main St., Bradford, Pa. "Emco."
- Emlenton Refining Co., Emlenton, Pa.
- Empire Refineries, Unity Bldg., Tulsa, Okla.
- En-ar-co—See National Refining Co.
- Ensign Refining Co., 10703 Quebec Ave., Cleveland, O.
- Enterprise Oil Co., 164 Chandler St., Buffalo, N. Y. "Duplex."
- Eureka—See Crane & Co.
- Excelsior—See Mills Oil Co.
- Expert—See Warren Refining & Chemical Co.
- Eze-Lube—See American Oil Co.
- F. V.—See Wadhams Oil Co.
- Faultless—See Hawkeye Oil Co.
- Flake Bros. Refining Co., 24 State St., New York, N. Y.
- Foco Oil Co., 1125 Liberty St., Franklin, Pa. "Focolene."
- Focolene—See Foco Oil Co.
- Frank Oil Co., 32 W. Spring St., Titusville, Pa.
- Franklin Refining Co., Hancock Bldg., Franklin, Pa. "Venco."
- French—See Marshall Oil Co.
- G. M. C.—See Gearo Mfg. Co.
- G. W.—See Great Western Oil Co.
- Galena-Signal Oil Co. of Texas, Carter Bldg., Houston, Tex. "Nyfte."
- Gargoyle Mobiloids—See Vacuum Oil Co.
- Gearese—See Swan & Finch Co.
- General Oil Works Co., Traction Bldg., Indianapolis, Ind. "Reliable."
- Gearo Mfg. Co., Vine & Olive Sts., Quincy, Ill. "G. M. C."
- Gibbs-Brown Oil & Gasoline Co., 500-10 S. Theresa Ave., St. Louis, Mo. "Vortex."
- Globe—See Borne-Scrymser Co.
- Grand Prix—See Alexander & Co.
- Great Western Oil Co., 2555 E. 37th St., Cleveland, O. "Nokarbo," "Crown," "Mogul," "G. W."
- Greenslade Oil Co., 455 W. Jefferson Ave., Detroit, Mich.
- Gulf Refining Co., Pittsburgh, Pa. "Supreme."
- Haggerty Refining Co., 50 South St., New York, N. Y. "Thermo."
- Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 655.)
- Harris Oil Co., A. W., Providence, R. I. (See page 493.)
- Harris Oil & Grease Works, 233 E. Spring St., Titusville, Pa.
- Harrison, Jr., Co., John, 21st & Race Sts., Philadelphia, Pa.
- Havoline—See Indian Refining Co.
- Hawkeye Oil Co., Miles & Roosevelt Sts., Waterloo, Ia. "Faultless."
- Haw, George A., 135 Front St., New York, N. Y. "Panhard."
- Hieronimus & Sons, J. A., 106-08 Stewart St., San Francisco, Cal. "Hilene."
- Hilene—See Hieronimus & Sons.
- Hinds & Coon, 124-26 Pearl St., Boston, Mass. "Peach."
- Hobson Oil Co., 1974 Broadway, New York, N. Y. "Knight."
- Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whisoll."
- Houghton & Co., E. F., 240 Somerset St., Philadelphia, Pa.
- Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
- I. X. L.—See Kramer Co.
- Ideal—See Sheppard, W. S.
- Ideal—See Street & Co.
- Indian Refining Co., 244 Madison Ave., New York, N. Y. "Havoline."
- Invader—See Kellom & Co.
- Invincible—See Miller & Sons Co.
- Jaxonoli—See American Oil Corp.
- Jones & Bro., J., 423 Locust St., Philadelphia, Pa. "Balkan."
- Kellogg & Co., E. H., 243-44 South St., New York, N. Y.
- Kellom & Co., Chas. F., 21st & Race Sts., Philadelphia, Pa. "Invader."
- Kenco—See Kendall Refining Co.
- Kendall Refining Co., Bradford, Pa. "Kenco."
- Kentucky Consumers Oil Co., 37th & Bank Sts., Louisville, Ky. "Crystalline."
- Keystone Lubricating Co., 21st & Clearfield Sts., Philadelphia, Pa.
- Keystone Oil & Mfg. Co., 111 N. Market St., Chicago, Ill.
- Knight—See Hobson Oil Co.
- Koolmotor—See Lubric Oil Co.
- Kramer Co., W. J., 214-16 Reed St., Milwaukee, Wis. "I. X. L."
- La-Lo Chemical Co., Hay & Friendship Sts., Providence, R. I.
- Layton Park Oil & Soap Co., M. & M. Bank Bldg., Milwaukee, Wis. "A-B-C."
- Liberty Bell Oil Co., 600 S. Vandeventer Ave., St. Louis, Mo.

Everything is listed under the NOUN or principal word

OILS, Lubricating (Continued)

- Liberty Chemical Works, Chicago, Ill.
(See page 783.)
- Liberty—See Richardson Lubricating Co.
- Loos & Dilworth, 134 S. Front St., Philadelphia, Pa. "Pioneer."
- Lubric Oil Co., Lakeside & Marquette Rd., Cleveland, O. "Koolmotor."
- Lubrite Refining Co., Arcade Bldg., St. Louis, Mo.
- Lubrolene—See Colorado Lubricating Co.
- Lynch, Alonso K., 310-12 Flushing Ave., Brooklyn, N. Y. "Advance."
- McLean-Jones Oil & Supply Co., 40 Court St., Boston, Mass. "Swastika."
- Magie Bros., 110-12 S. Clinton St., Chicago, Ill.
- Magnolene—See Magnolia Petroleum Co.
- Magnolia Petroleum Co., Akard & Main Sts., Dallas, Tex. "Magnolene."
- Manhattan Oil Co., 592 Vandalia St., St. Paul, Minn. "Molco."
- Manufacturers Oil & Grease Co., 2231 Junction Rd., S. W., Cleveland, O. "Polorauto," "Tuxedo."
- Marathon—See Transcontinental Oil Co.
- Marshall Oil Co., Marshalltown, Ia. "French."
- Mid West Co., 30 Ionia Ave., S. W., Grand Rapids, Mich.
- Middle States Oil Co., Engineers Bldg., Cleveland, O. "Econo-Lub."
- Miller's Sons Co., A. D., Columbus & Preble Aves., Pittsburgh, Pa. "Invincible."
- Mills Oil Co., So. West St., Syracuse, N. Y. "Excelsior."
- Milwaukee Lubricants Co., 224 Broadway, Milwaukee, Wis.
- Mogul—See Great Western Oil Co.
- Molco—See Manhattan Oil Co.
- Monamobile—See Monarch Mfg. Co.
- Monarch Mfg. Co., 11th Ave. & Sixth St., Council Bluffs, Ia. "Monamobile."
- Monogram—See New York Lubricating Oil Co.
- Motorlube—See Tygett Co.
- Motul—See Swan & Finch Co.
- Murphy's—See Phoenix Oil Co.
- Mutual Oil Co., Inter-State Bldg., Kansas City, Mo.
- National Oil & Supply Co., 180 Frelinghuysen Ave., Newark, N. J. "Viscos."
- National Refining Co., National Bldg., Cleveland, O. "En-ar-co."
- Navarre Oil Co., 8800 Nevada Ave., Cleveland, O.
- New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
- New York & New Jersey Lubricant Co., 401 Broadway, New York, N. Y. "Motorol."
- No-Carbon—See Noble Refining Co.
- No-Squeak—See Crum Mfg. Co.
- Noble Refining Co., 708 Canal Rd., Cleveland, O. "No-Carbon."
- Nokarbo—See Great Western Oil Co.
- Nye, Wm. F., New Bedford, Mass.
- Nye, Wm. F., New Bedford, Mass. "Nyoll."
- Nyfte—See Galena-Signal Oil Co. of Texas.
- Nyoll—See Nye, Wm. F.
- O'Neill Oil & Paint Co., 297-303 E. Water St., Milwaukee, Wis. "Velvet."
- Ohio Refining Co., Laidlaw Ave., Cincinnati, O. "Pep."
- Oil City Oil & Grease Co., Seneca St., Oil City, Pa. "Pennzoll."
- Oil & Grease Co. of America, 414 Flushing Ave., Brooklyn, N. Y.
- Oildag—See Cassidy Co.
- Oilsum—See White & Bagley Co.
- Opaline—See Sinclair Refining Co.
- Palace—See Tiona Refining Co.
- Panama Lubricants Co., 2624 Santa Fe Ave., Los Angeles, Cal.
- Panhard Oil Corp., 395 Broadway, New York, N. Y.
- Paragon Refining Co., 2935 Front St., Toledo, O. "Petrolene."
- Paramount—See Schibling, Frederick.
- Parker Refining Co., 1307 W. 11th St., Cleveland, O.
- Parolene—See Bayerson Oil Works.
- Pathfinder—See Sweet, Charles F.
- Patterson Lubricating Co., 114 Broad St., Boston, Mass.
- Penn Petroleum & Supply Co., 1224-26 Washington Ave., Philadelphia, Pa. "Primus."
- Pennant—See Pierce Oil Corp.
- Pennzoll—See Oil City Oil & Grease Co.
- Pennzoll—See Panama Lubricants Co.
- Pep—See Ohio Refining Co.
- Perfection—See Crew Levick Co.
- Perfection—See Wood Co.
- Perry Oil Co., 373 Central Ave., Pawtucket, R. I.
- Petrolene—See Paragon Refining Co.
- Petroleum Products Co., 39th St. & B. & O. R. R., Pittsburgh, Pa. "Sound-Proof."
- Phinney Bros. Co., Chambers Bldg., Oil City, Pa. "Quaker State."
- Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Murphys."
- Pierce Oil Corp., 25 Broad St., New York, N. Y. "Pennant."
- Pigot-Sayre Co., 17 Battery Pl., New York, N. Y. "Aurora."
- Pioneer—See Loos & Dilworth.
- Polarine—See Standard Oil Co. of N. Y.
- Polorauto—See Manufacturers Oil & Grease Co.
- Powaero—See Power-Oil Co.
- Power-Oil Co., St. Louis, Mo. "Powerol," "Powaero," "Powerpull."
- Powero—See Tide Water Oil Sales Corp.
- Powerol—See Power-Oil Co.
- Powerpull—See Power-Oil Co.
- Primus—See Penn Petroleum & Supply Co.
- Pure Oil Co., 1306 First St., S., Minneapolis, Minn. "Furtan."
- Pure Oil Co., Fifth & Chestnut Sts., Philadelphia, Pa.
- Puritan—See Pure Oil Co.
- Puritan Oil & Paint Co., 1213 W. 70th St., Cleveland, O.
- Pycnoleum—See Belden & Co.
- Pyramid Oil Co., 2424 University Ave., Minneapolis, Minn.
- Quaker State—See Phinney Bros. Co.
- Red "C" Oil Mfg. Co., Keyser Bldg., Baltimore, Md. "Speedway."
- Regal—See Stevenson Bro. & Co.
- Reighard Oil Co., H. E., 929 24th St., Altoona, Pa. "Crudeline."
(See page 609.)
- Reliable—See Colgan Mfg. & Supply Co.
- Reliable—See General Oil Works Co.
- Reynold—See Reynolds Oil & Grease Co.
- Reynolds Oil & Grease Co., 123 Oliver St., Boston, Mass. "Reynoll."
- Richardson Lubricating Co., Front & Maine Sts., Quincy, Ill. "Liberty."
- Rie-Nie—See Durkee-Atwood Co.
- Robinson & Son Co., Wm. C., 32 South St., Baltimore, Md. "Autoline."
- Rome—See Howard Lubricants Co.
- Roseberg Oil Co., 923 Santa Fe Ave., Los Angeles, Cal. "Allegheny."

Everything is listed under the NOUN or principal word

OILS, Lubricating (Continued)

- Royal Petroleum Co., 204 E. 74th St., New York, N. Y.
- Ruby—See Street & Co.
- Ruby—See Bayerson Oil Works.
- Sawyer Oil Co., Howard B., 63 Long Wharf, Boston, Mass. "Blue Ribbon."
- Schibling, Frederick, 617 Greenwich St., New York, N. Y. "Paramount."
- Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-In-One."
- Shappell Petroleum Products Co., N. West St. Rd., Lima, O.
- Sheppard, W. S., 21 Lawrence St., Newark, N. J. "Ideal."
- Sinclair Refining Co., 111 W. Washington St., Chicago, Ill. "Opaline." "Sinco."
- Sinco—See Sinclair Refining Co.
- Sloane & Zook, 101 Main St., Bradford, Pa.
- Snow Flake Axle Grease Co., 123 Oliver St., Fitchburg, Mass.
- Sonneborn Sons, L., 263 Pearl St., New York, N. Y. "Amalie."
- Sound-Proof—See Petroleum Products Co.
- Spears's Sons Co., Alden, 140 Sixth St., Boston, Mass.
- Speedway—See Red "C" Oil Mfg. Co.
- Spoco Oil Co., 313 Larimer St., Denver, Colo.
- Standard Oil Co. of N. Y., 26 Broadway, New York, N. Y. "Polarine," "Zerolene."
- Sterling Oil Corp., 608 Swan St., Buffalo, N. Y. "X-Tra."
- Stevenson Bro. & Co., 110 Race St., Philadelphia, Pa. "Regal."
- Stock Xylite Grease & Oil Co., G. B., 619 Water St., Port Huron, Mich. "Xylite."
- Street & Co., J. D., 41st St. & Park Ave., St. Louis Mo. "Ideal," "Ruby," "Economy."
- Sullivan Oil Co., 413 N. Wells St., Chicago, Ill.
- Sun Co., Finance Bldg., Philadelphia, Pa. "Sunoco."
- Sunoco—See Sun Co.
- Suor Oil Products Corp., 1-7 Howell St., Buffalo, N. Y. "Suroco."
- Superbe—See Curry Bros. Oil Co.
- Superior Oil Co., 1436 W. Third St., Cleveland, Ohio.
- Supreme—See Gulf Refining Co.
- Surco—See Suor Oil Products Corp.
- Sutherland & Co., P., 232 Milk St., Boston, Mass. "Velvet."
- Swan & Co., Alden S., 185 Front St., New York, N. Y. "Swanoline."
- Swan & Finch Co., 185 Broadway, New York, N. Y. "Atlas," "Brown," "Motul," "Gear-ese," "Aerul," "Calypsol."
- Swanoline—See Swan & Co.
- Swastika—See McLean-Jones Oil & Supply Co.
- Sweet, Charles F., 247 State St., Hartford, Conn. "Pathfinder."
- Syco—See Symonds Co.
- Symonds Co., Joseph H., Westfield, Mass. "Syco."
- Texaco—See Texas Co.
- Texas Co., 17 Battery Pl., New York, N. Y. "Texaco."
- Thermo—See Haggerty Refining Co.
- Three-In-One Oil Co., 165 Broadway, New York, N. Y.
- Tide Water Oil Sales Corp., 11 Broadway, New York, N. Y. "Veedol," "Powero."
- Tions Refining Co., Madison Ave. & Belt Ry., Indianapolis, Ind. "Palace."
- Transcontinental Oil Co., Benedum-Trees Bldg., Pittsburgh, Pa. "Marathon."
- Tuxedo—See Manufacturers Oil & Grease Co.
- Tygart Co., E. A., 126 N. Front St., Philadelphia, Pa. "Motorlube."
- Underhay Oil Co., 276 Franklin St., Boston, Mass.
- Union Oil Co. of California, Union Oil Bldg., Los Angeles, Cal. "Aristo."
- Union Petroleum Co., Widener Bldg., Philadelphia, Pa.
- Unity—See Curry Bros. Oil Co.
- Vacuum Oil Co., 61 Broadway, New York, N. Y. "Gargoyle Mobilolls."
- Valley Oil Co., Century Bldg., Cleveland, O. "Carolene."
- Valvoline Oil Co., 11 Broadway, New York, N. Y.
- Valvone—See Belden & Co.
- Veedol—See Tide Water Oil Sales Corp.
- Velvet—See O'Neill Oil & Paint Co.
- Velvet—See Sutherland & Co.
- Venco—See Franklin Refining Co.
- Ventura Refining Co., 458 S. Spring St., Los Angeles, Cal.
- Visco Motor Oil Co., 2104 Superior Ave., N. W., Cleveland, O.
- Viscomotor—See Viscosity Oil Co.
- Viscos—See National Oil & Supply Co.
- Viscosity Oil Co., 1101-03 W. 37th St., Chicago, Ill. "Viscomotor."
- Vortex—See Gibbs-Brown Oil & Gasoline Co.
- Wadhams Oil Co., 359 Clinton St., Milwaukee, Wis. "F. V."
- Warren Refining & Chemical Co., Cleveland, O. "Expert."
- Waverly Oil Works Co., 54th St. & A. V. R. R., Pittsburgh, Pa. "Defiance."
- Whale—See Nye, Wm. F.
- White & Bagley Co., Worcester, Mass. "Ollum." (See page 607.)
- Whisol—See Hollingshead Co.
- Willhelm Oil Co., 2361 Hampden Ave., St. Paul, Minn. "Wiloco."
- Wiloco—See Willhelm Oil Co.
- Winn, Wm. R., 143 Maiden Lane, New York, N. Y.
- Winne, Howard B., 714 W. Jackson Blvd., Chicago, Ill.
- Wolf's Head—See Wolverine Lubricants Co.
- Wolverine Lubricants Co., 44 Whitehall St., New York, N. Y. "Wolf's Head." (See page 607.)
- Wonder Worker—See Hall-Thompson Co.
- Wood Co., W. A., 273 Atlantic Ave., Boston, Mass. "Perfection."
- X-Tra—See Sterling Oil Corp.
- Xylite—See Stock Xylite Grease & Oil Co.
- Youkim—See Young Co.
- Young Co., Frank L., 111 Purchase St., Boston, Mass. "Youkim."
- Zerolene—See Standard Oil Co. of N. Y.
- Zone Oil Co., W. 11th St., Cleveland, O.
- Zurn Co., O. F., 2736-38 N. Broad St., Philadelphia, Pa. "Zurnoil."
- Zurnoil—See Zurn Co.

OILS, NON-FLUID—See Greases, Cup and Gear

OLDHAM COUPLINGS—See Couplings, Magneto and Generator

ONE-MAN TOPS—See Tops

OPEN END WRENCHES—See Wrenches, Nut and Bolt

Everything is listed under the NOUN or principal word

OPENERS, Curtain

(A device to be attached to doors of open cars so that storm curtains may be opened with the doors)

- Blackmore, Charles C., 33 Greenwood Ave., Dayton, O.
 Ervien, Horace, Ogonts, Pa.
 Franklin Mfg. Co., 354 Mortimer St., Buffalo, N. Y. (See page 643.)
 Holcker Mfg. Co., 16th & McGee Sts., Kansas City, Mo.
 Jitney Curtain Co., 30 N. Ludlow St., Dayton, O.
 Kelly & Towers, 1618 Walnut Ave., Cleveland, O. "Towers."
 Midway Mechanical Co., St. Paul, Minn. "U-Fit-it."
 Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.
 Stirling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Towers—See Kelly & Towers
 U-Fit-it—See Midway Mechanical Co.

OPENERS, Curtain, for Fords

(A device to be attached to doors of open cars so that storm curtains may be opened with the doors)

- Blackmore, Charles C., 33 Greenwood Ave., Dayton, O.

OPENERS, Electric and Pneumatic Garage Door

(For manually operated openers—See Holders and Openers, Garage Doors.)

- Allith-Prouty Co., Danville, Ill. "Electromantic." (See page 763.)
 Campbell Mfg. Co., 226 First St. N., Minneapolis, Minn.
 Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. (See pages 607 and 741.)
 Doan & Co., Howard E., Joliet, Ill.
 Electromatic—See Allith-Prouty Co.
 Foss-Hughes Co., 21st & Market Sts., Philadelphia, Pa.
 Lindberg Co., J. F., 501 N. La Salle St., Chicago, Ill.
 Lovejoy Automatic Door Opener Co., 412-14 Second St., Laramie, Wyo.
 Miller & Son Co., Geo. B., Waterloo, Iowa. "Perkins."
 Peerless Door Control Co., 506 S. Wabash Ave., Chicago, Ill.
 Perkins—See Miller & Son Co.
 R. W. Stewart—See Richards-Wilcox Mfg. Co.
 Richards-Wilcox Mfg. Co., Third St. & C. B. & Q. R. R. Tracks, Aurora, Ill. "R. W. Stewart."

OPENERS, GARAGE DOOR—See Openers, Electric and Pneumatic Garage Door**OPENERS, PET COCK, FOR FORDS—See Wrenches, Oil Cock****OPENERS, PNEUMATIC GARAGE DOOR—See Openers, Electric and Pneumatic Garage Door****ORNAMENTS, Radiator**

(For Flag Ornaments—See Flags; also Holders, Flag; for Metal Monograms—See Monograms, Ornamental)

- Aetna Brass & Bronze Co., 1631-25 E. 55th St., Cleveland, O.

Allen Pin Co., 101 Sabin St., Providence, R. I.
 Arkay—See Riley-Klots Mfg. Co.

Art Metal Works, Aronson Sq., Newark, N. J. "Moto-Fan," "Ronson." (See page 607.)

Ashland Products Co., 50 E. Ninth St., Ashland, O. "Victory." (See page 487.)
 Automobile Engineering Co., 14 W. Washington St., Chicago, Ill.

Cramp & Sons Ship & Engine Building Co., Wm., Philadelphia, Pa. (See page 199.)

Dalkranian Co., J. K. & J. K., 412 Hill St., West Hoboken, N. J. "Metroplane."

General Etching & Mfg. Co., 213 S. Hamilton Ave., Chicago, Ill.

Johnson & Seckendorf, 9 W. 45th St., New York, N. Y.

Metalware Corp., 141 W. Austin Ave., Chicago, Ill.

Metroplane—See Dalkranian Co.

Moto-Fan—See Art Metal Works.

Pierrot Novelty Co., Merchants Bank Bldg., Indianapolis, Ind.

Rehberger Mfg. Co., 2159 Lewis St., Chicago, Ill.

Riley-Klots Mfg. Co., 17 Mulberry St., Newark, N. J. "Arkay."

Robbins & Myers Co., Springfield, O.

Ronson—See Art Metal Works.

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) (See page 257.)

Stevens & Co., 375 Broadway, New York, N. Y. (See page 197.)

Victory—See Ashland Products Co.

ORNAMENTS, TRANSFER—See Transfers, Decalcomania**ORPHAN CAR PARTS—See Parts, Orphan Car Repair****OVERALLS—See Clothing, Motorists****OVERALLS, CAR—See Covers, Fender****OVERHEAD VALVE SILENCERS—See Silencers, Overhead Valve****OXY-ACETYLENE WELDERS CLAMPS—See Clamps, Oxy-Acetylene Welders****OXY-ACETYLENE WELDING—See Welding, Autogenous****OXY-ACETYLENE WELDING MACHINES—See Machines, Autogenous Welding****OXYGEN CYLINDER CLEANING APPARATUS—See Machines, Engine Decarbonizing****OXYGEN TANK TRUCKS—See Trucks, Acetylene and Oxygen Tank****OXYGEN TANKS—See Tanks, Oxygen****PACKING, Asbestos and Fibrous**

A-B-C—See American Brake-Lining Co.
 Adpasco—See Advance Packing & Supply Co.
 Advance Packing & Supply Co., 64 E. Lake St., Chicago, Ill. "Bestalline," "Tenax," "Endura," "Adpasco."

Alabama—See Empire Tire & Rubber Co.

Alabestos—See Consolidated Packing & Supply Co.

Everything is listed under the NOUN or principal word

For
**MOTOR
CARS**



For
**MOTOR
TRUCKS**

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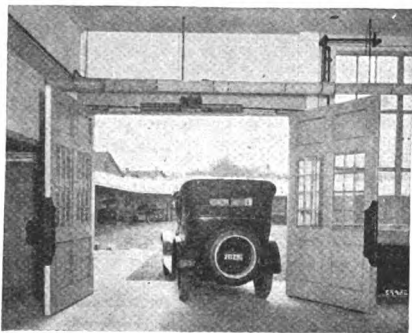
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PACKING, Asbestos and Fibrous (Continued)

Alltex Weaving & Specialty Co., 212 Broadway, New York, N. Y.
 Ambler Autobestos—See Keasbey & Mattison Co.
 American Brake-Lining Co., Lansdale, Pa. "A-B-C." (See page 533.)
 American Mills Co., 39 W. 19th St., New York, N. Y.
 Anchor Packing Co., 72 Murray St., New York, N. Y. "Ankorite," "Hydroil," "Tauril."
 Ankorite—See Anchor Packing Co.
 Asbestos & Rubber Works of America, 1819 Broadway, New York, N. Y. "Motobestos." (See page 530.)
 Bestalline—See Advance Packing & Supply Co.
 Burgin & Co., 487 Broadway, New York, N. Y. "Likehyd."
 Calibestos—See General Asbestos & Rubber Co.
 Consolco—See Consolidated Packing & Supply Co.
 Consolidated Packing & Supply Co., 21 Barclay St., New York, N. Y. "Wisold," "Alabestos," "Consolco." (See page 651.)
 Crandall Packing Co., Palmyra, N. Y.
 Defiance—See Empire Tire & Rubber Co.
 Dominion Asbestos & Rubber Corp., 154 Nassau St., New York, N. Y. "Kidskin." (See page 600.)
 Dugas-Hundley Corp., 39 W. 34th St., New York, N. Y. "Reliance."
 Durabestos—See United Asbestos & Packing Co.
 Duraco—See United Asbestos & Packing Co.
 Empire Tire & Rubber Co., Mulberry St. & Clinton Ave., Trenton, N. J. "Faust," "Hero," "Alabama," "Perfect," "Defiance."
 Endura—See Advance Packing & Supply Co.
 Endura Mfg. Co., 6317 Eastwick Ave., Philadelphia, Pa.
 Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
 Faust—See Empire Tire & Rubber Co.
 Fibre Finishing Co., 73 Fremont St., Boston, Mass. "Vellumoid."
 Garlock Packing Co., Palmyra, N. Y.
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa.
 General Asbestos & Rubber Co., Charleston, S. C. "Calibestos."
 Goodyear Tire & Rubber Co., Akron, O.
 Gratone—See Wilder Mfg. Co.
 Hero—See Empire Tire & Rubber Co.
 Hydroil—See Anchor Packing Co.
 J. M. Mogul—See Johns-Manville Co.
 Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J. M. Mogul."
 Keasbey & Mattison Co., Butler Ave., Ambler, Pa. "Ambler Autobestos." (See page 77.)
 Kidskin—See Dominion Asbestos & Rubber Corp.
 Knowlton Rubber Co., Geo. W., 60 Pearl St., Boston, Mass.
 Likehyd—See Burgin & Co.
 Luxoid—See Thermoid Rubber Co.
 Mibroco—See Mikesell Brothers Company.
 Mikesell Brothers Company, 150 N. La Salle St., Chicago, Ill. "Mibroco," "Ronuk," "Wabash." (See page 530.)
 Motobestos—See Asbestos & Rubber Works of America
 Perfect—See Empire Tire & Rubber Co.
 Purbestos—See Wilder Mfg. Co.
 Reliance—See Dugas-Hundley Corp.

Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tufftex."
 Ronuk—See Mikesell Brothers Company.
 Springbestos—See Springman Paper Products Co.
 Springman Paper Products Co., Detroit, Mich. "Springbestos," "Springrite." (See page 600.)
 Springrite—See Springman Paper Products Co.
 Staybestos Mfg. Co., Germantown Ave. & Berkley St., Philadelphia, Pa.
 Tauril—See Anchor Packing Co.
 Tenax—See Advance Packing & Supply Co.
 Thermoid Rubber Co., Trenton, N. J. "Luxoid." (See page 531.)
 Titelex—See Wilder Mfg. Co.
 Tufftex—See Rochester Woven Belting Corp.
 United Asbestos & Packing Co., 629 Washington Blvd., Chicago, Ill. "Duraco," "Durabestos."
 Vellumoid—See Fibre Finishing Co.
 Wabash—See Mikesell Brothers Company.
 Wearwell Gasket & Packing Co., Camden, N. J.
 Wilder Mfg. Co., 1819 N. 17th St., St. Louis, Mo. "Purbestos," "Titelex," "Gratone." (See page 411.)
 Wisold—See Consolidated Packing & Supply Co.

PACKING, FIBROUS—See Packing, Asbestos

PACKING, METALLIC—See Gaskets, Metallic

PACKING, Rubber

Boston Belting Co., 34 Linden Park St., Boston, Mass.
 Bowers Rubber Works, 63-76 Sacramento St., San Francisco, Cal.
 Cincinnati Rubber Mfg. Co., Cincinnati, O. "Royal," "Sandow," "Wampus," "Old Crow." (See page 475.)
 Crandall Packing Co., Palmyra, N. Y.
 Dugas-Hundley Corp., 39 W. 34th St., New York, N. Y. "Reliance."
 Fire—See New York Belting & Packing Co.
 Garlock Packing Co., Palmyra, N. Y.
 Goodyear Tire & Rubber Co., Akron, O.
 Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
 Home Tire Co., Trenton, N. J.
 Knowlton Rubber Co., Geo. W., 60 Pearl St., Boston, Mass.
 Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
 National India Rubber Co., Bristol, R. I.
 New York Belting & Packing Co., 31 Chambers St., New York, N. Y. "Fire."
 Old Crow—See Cincinnati Rubber Mfg. Co.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Reliance—See Dugas-Hundley Corp.
 Royal—See Cincinnati Rubber Mfg. Co.
 Sandow—See Cincinnati Rubber Mfg. Co.
 United States Rubber Co., 1790 Broadway, New York, N. Y.
 Voorhees Rubber Mfg. Co., 20-56 Bowdoin Ave., Jersey City, N. J.
 Wampus—See Cincinnati Rubber Mfg. Co.

PAD SEATS—See Seats, Auxiliary

PADDING, BODY—See Lining, Body or Frame

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PADDING, FRAME—See Lining, Body or Frame

PADLOCKS—See Locks, Cabinet and Pad

PADS, GRIP—See Protectors, Door

PADS, LICENSE—See Numbers, License

PADS, PEDAL—See Grips, Pedal

PADS, SEAT—See Seats, Auxiliary

PAIS, FOLDING—See Buckets, Collapsible

PAINT BRUSHES—See Brushes, Paint

PAINT DRYING ROOMS—See Rooms, Paint and Varnish Drying

PAINT FILLERS—See Fillers, Paint

PAINT REMOVERS—See Removers, Paint, Enamel and Varnish

PAINTS, Aluminum and Bronze

Alustrum—See Devos & C. T. Reynolds Co.

Anchor—See Bronze Powder Works Co.

Arnold, N. B., 1 Stigourney St., Brooklyn, N. Y. "Silkup."

Bar Bros., 433-43 W. 37th St., New York, N. Y.

Bilchaco—See Billings-Chapin Co.

Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco."

Binswanger & Co., E., 115 N. Fourth St., Philadelphia, Pa.

Blood & Co., T. L., 413 Wacouta St., St. Paul, Minn.

Bronze Powder Works Co., 801 Magnolia Ave., Elizabeth, N. J. "Anchor," "Vulcan."

Devos & C. T. Reynolds Co., F. W., 101 Fulton St., New York, N. Y. "Alustrum."

Dutch—See Van Cleef Bros.

Geratendorfer Bros., 221 E. 42d St., New York, N. Y. "Sapolin."

Jewel—See Wadsworth-Howell & Co.

Kemp Co., W. H., 1737 Broadway, New York, Montauk Paint Mfg. Co., 170-72 Second Ave., Brooklyn, N. Y.

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)

Norwesco—See Northwestern Chemical Co.

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo.

Permatex Co., Brooklyn, N. Y. (See page 277.)

Sapolin—See Geratendorfer Bros.

Schlegel Mfg. Co., Oscar, 124 E. 13th St., New York, N. Y.

Silkup—See Arnold, N. B.

Uhlfelder Co., Leo, 130-32 W. 39th St., New York, N. Y.

Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."

Vulcan—See Bronze Powder Works Co.

Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

PAINTS, BRONZE—See Paints, Aluminum

PAINTS, CYLINDER—See Paints, Exhaust Pipe

PAINTS, Enamel

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.

Ad-el-ite—See Adams & Elting Co.

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 207.)

Akron Varnish Co., Akron, O. "Imperial."

American Paint Products Co., 810 S. Morgan St., Chicago, Ill.

Armitage & Co., John L., 54 Dawson St., Newark, N. J.

Ault & Wiborg Co., New, Seventh & Culvert Sts., Cincinnati, O.

Auto Lac—See Permatex Co.

Auto Products Mfg. Co., Buffalo, N. Y. "Cov-R-Mar."

Autonamel Co., 94-97 St. Paul St., Rochester, N. Y.

Bay State—See Wadsworth, Howland & Co.

Berry Bros., 211 Lieb St., Detroit, Mich.

Bilchaco—See Billings-Chapin Co.

Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco."

Bird & Co., J. A. & W., 88 Pearl St., Boston, Mass. "Ripolin." (Importers.)

Bissell Varnish Co., 271 Mountain Grove St., Bridgeport, Conn. "Crocketts."

Blaxshine—See Twin City Varnish Co.

Boyer Chemical Co., 13 E. Kinzie St., Chicago, Ill.

Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.

Cleveland Varnish Co., Cleveland, Ohio.

Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)

Cov-R-Mar—See Auto Products Mfg. Co.

Crocketts—See Bissell Varnish Co.

Detroit White Lead Works, 1960 Milwaukee Ave., E. Detroit, Mich.

Devos & C. T. Reynolds Co., F. W., 101 Fulton St., New York, N. Y.

Eberson-Lindaley Paint Co., 1830-32 Morgan St., St. Louis, Mo.

Effecto—See Pratt & Lambert.

Felton, Sibley & Co., 130-40 N. Fourth St., Philadelphia, Pa.

Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.

Forest City Paint & Varnish Co., 3324 Lakeside Ave., Cleveland, O.

Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O. "Royal."

Hanline Bros., 23-25 Howard St., Baltimore, Md.

Hardy Paint & Varnish Co., Oakwood & M. C. R. R., Toledo, O.

Hilo Varnish Corp., Marcy & Flushing Aves., Brooklyn, N. Y.

I. C. U.—See Livingston Co.

Imperial—See Akron Varnish Co.

Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.

Koppak—See Koppers Products Co.

Koppers Products Co., 358 Union Arcade, Pittsburgh, Pa. "Koppak."

Liberty Chemical Works, Chicago, Ill. (See page 783.)

Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."

McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.

Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.

Everything is listed under the NOUN or principal word

PAINTS, Enamel (Continued)

Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
 Montauk Paint Mfg. Co., 170-72 Second Ave., Brooklyn, N. Y.
 Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
 Once-Over—See Torkelson Mfg. Co.
 Peerless—See Columbus Varnish Co.
 Permatex Co., Sheepshead Bay, N. Y. "Auto Lac." (See page 277.)
 Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Effecto."
 Quickwork—See Standard Varnish Works.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Ripolin—See Bird & Co.
 Royal—See Glidden Co.
 Royalcote—See Wilhelm Co.
 Sherwin-Williams Co., 100 Canal St., Cleveland, O.
 So-E-Zy—See Watson Paint & Glass Co.
 Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
 Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn. "Once-Over."
 Tousey Varnish Co., 520 W. 25th St., Chicago, Ill.
 Twin City Varnish Co., 208 N. Wabash Ave., Chicago, Ill. "Blaxshine."
 Valentine & Co., 456 Fourth Ave., New York, N. Y.
 Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Bay State."
 Watson Paint & Glass Co., McKeesport, Pa. "So-E-Zy."
 Wilhelm Co., A., Third & Bern Sts. Division, Reading, Pa. "Royalcote."
 Won Kote Enamel Co., 16 N. Brook St., Geneva, N. Y.

PAINTS, Exhaust Pipe, Muffler and Cylinder

Arco Co., Euclid Ave. & E. 65th St., Cleveland, Ohio.
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
 Auto Products Mfg. Co., Buffalo, N. Y. "Nev-R-Chip."
 Century—See Arnstein, Eugene.
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)
 Day & Co., James B., 224-26 W. Superior St., Chicago, Ill.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 Dutch—See Van Cleef Bros.
 Ebersohn-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo.
 E-Fec-Tiv—See Permatite Mfg. Co.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 655.)
 Hardy Paint & Varnish Co., Oakwood & M. C. R. R., Toledo, O.
 Hilo Varnish Corp., Marcy & Flushing Aves., Brooklyn, N. Y.
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
 Moore & Co., Benjamin, 231-33 Front St., Brooklyn, N. Y.
 Nev-R-Chip—See Auto Products Mfg. Co.
 Never-Burn—See Northwestern Chemical Co.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Never-Burn." (See page 275.)

Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo.
 Peerless—See Columbus Varnish Co.
 Permatex Co., Sheepshead Bay, N. Y. (See page 277.)
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
 Rie-Nie—See Durkee-Atwood Co.
 Royalcote—See Wilhelm Co.
 Silkup—See Arnold, N. B.
 Stowell, E. R., Oden, Mich.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Wonder Worker—See Hall-Thompson Co.
 Wilhelm Co., Division A, Third & Bern Sts., Reading, Pa. "Royalcote."

PAINTS, Luminous

(For illuminating clock, meter or page dials; for concerns who apply the compound—See Dials, Luminous)

Cold Light Mfg. Co., 50 Union Sq., New York, N. Y. "Marvelite."
 Cummings Chemical Co., W.L. (Lansdowne), Philadelphia, Pa.
 Luma—See Radium Chemical Co.
 Marvelite—See Cold Light Mfg. Co.
 Radium Chemical Co., Forbes & Meyran Aves., Pittsburgh, Pa. "Luma."
 United States Radium Corp., 58 Pine St., New York, N. Y. (See page 325.)

PAINTS, MUFFLER—See Paints, Exhaust Pipe**PAINTS, PHOSPHORESCENT—See Paints, Luminous****PAINTS, Rim**

(See also Paints, Aluminum and Bronze; also Paints, Enamel)

Ad-el-ite—See Adams & Elting Co.
 Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
 Be-Be-Co—See Boston Blacking Co.
 Beardslee, J. W., Elmira, N. Y.
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 E-Fec-Tiv—See Permatite Mfg. Co.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker." (See page 655.)
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 Jewel—See Wadsworth-Howland Co.
 Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)
 Norwesco—See Northwestern Chemical Co.
 Peerless—See Columbus Varnish Co.
 Permatex Co., Sheepshead Bay, N. Y. (See page 277.)
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Puritan Soap Co., 500 Exchange St., Rochester, N. Y.

Everything is listed under the NOUN or principal word

PAINTS, Rim (Continued)

Rie-Nie—See Durkee-Atwood Co.
 Rim Kote—See Hall-Thompson Co.
 Silkup—See Arnold, N. B.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Whiz—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.

PAINTS, Rubber

(For refinishing rubber mats and matting and painting tires)

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Tire-ite."
 (See page 267.)
 Arnold, N. B., 1 Sigsourney St., Brooklyn, N. Y. "Silkup."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
 Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Preservo."
 (See page 279.)
 Be-Be-Co.—See Boston Blacking Co.
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "Velvet"
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sole Distributors for Sterling Varnish Co., Pittsburgh, Pa. "Nitrex.")
 Century—See Arnstein, Eugene.
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)
 Cook, Geo. E., 360 Amsterdam Ave., New York, N. Y.
 Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers."
 Dol-Em-Up—See Western Vulcanizer Mfg. Co.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie Tyre Re-Nu."
 Dutch—See Van Cleef Bros.
 E-Fec-Tiv—See Permatite Mfg. Co.
 French & Co., Samuel H., York Ave., Fourth & Callowhill Sts., Philadelphia, Pa.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker."
 (See page 655.)
 Henry's—See Perfectfix Rubber Co.
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 I. C. U.—See Livingston Co.
 Instant Products Co., 21 Cambria St., Boston, Mass.
 Jewel—See Wadsworth-Howland Co.
 Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
 McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
 Mingo Products Co., 537 Rosedale St., (Wilkinsburg) Pittsburgh, Pa.
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
 Nitrex—See Cassidy Co.
 Northwestern Chemical Co., 785 State St., Marietta, O. "Tire-Lac." (See page 275.)
 Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Rubber-Nu."
 Peerless—See Columbus Varnish Co.
 Perfectfix Rubber Co., Greenbay Rd., Milwaukee, Wis. "Henry's."
 Permatex Co., Sheephead Bay, N. Y. (See page 277.)
 Permatite Mfg. Co., 31 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Preservo—See Atlas Auto Supply Co.

Puritan Soap Co., 500 Exchange St., Rochester, N. Y. "Tyrkote."
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Rie-Nie Tyre-Re-Nu—See Durkee-Atwood Co.
 Rogers—See Detroit White Lead Works.
 Rub-Bar-Nu—See Nu-Back Mfg. Co.
 Silkup—See Arnold, N. B.
 Sterling Varnish Co.—See Cassidy Co.
 Tire-ite—See Adams & Elting Co.
 Tire-Lac—See Northwestern Chemical Co.
 Tyrkote—See Puritan Soap Co.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Dutch."
 Velvet—See Bradley & Vrooman Co.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Western Vulcanizer Mfg. Co., 150 N. Desplaines St., Chicago, Ill. "Dol-Em-Up."
 Whiz—See Hollingshead Co.
 Wonder Worker—See Hall-Thompson Co.

PAINTS, Storage Battery Terminal

(For eliminating and preventing corrosion)

Aid Chemical Co., 2601 Villet St., Milwaukee, Wis.
 Battery-Life—See Saf-Te Mfg. Co.
 Saf-Te Mfg. Co., Inkeep Bldg., Bellefontaine, Ohio. "Battery-Life."

PAINTS, TIRE—See Paints, Rubber**PAINTS and COLORS**

Acme White Lead & Color Works, 3250 St. Aubin Ave., Detroit, Mich.
 Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.
 Ault & Wiborg Co., New, Seventh & Culvert Sts., Cincinnati, O.
 Bay State—See Wadsworth, Howland & Co.
 Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Oughto."
 Bissell Varnish Co., 377 Mountain Grove St., Bridgeport, Conn. "Crocketta."
 Buckeye Paint & Varnish Co., 15th & Lucas Sts., Toledo, O.
 Bulls-Eye—See Zinsser & Co.
 Capitol City—See Indianapolis Paint & Color Co.
 Certain-teed Products Corp., Boatmen's Bank Bldg., St. Louis, Mo.
 Chicago White Lead & Oil Co., 1454 S. Western Ave., Chicago, Ill. "King."
 Cincinnati Varnish Co., 211 South St., Cincinnati, O.
 Columbus Varnish Co., Columbus, O. "Peerless." (See page 341.)
 Crockett—See Bissell Varnish Co.
 Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich.
 Devos & C. T. Reynolds Co., F. W., 101 Fulton St., New York, N. Y.
 Dibble Color Co., 445 Larned St. W., Detroit, Mich.
 Ditzler Color Co., 40 W. Baltimore Ave., Detroit, Mich.
 du Pont de Nemours & Co., E. I. (Paint & Varnish Division), Wilmington, Del.
 Felton, Sibley & Co., 136-40 N. Fourth St., Philadelphia, Pa.
 Fix-A-Mar—See Panvar Co.
 Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.
 Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.
 French & Co., Samuel H., York Ave., Fourth & Callowhill Sts., Philadelphia, Pa.

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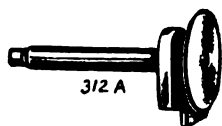
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BRIGHTMAN NUT AND MANUFACTURING COMPANY
SANDUSKY, OHIO

Manufacturers of Cold Drawn Hex Screw Stock
Detroit Office: 4856 Woodward Ave., A. J. Diebel, Rep.
Cincinnati Office: 500 Bell Block, A. T. Fisher, Rep.
Chicago, Ill.: The Bailey-Drake Co., Rep.
New York: 100 Church St., Steyn-Pease Co.
Cleveland, O.: 206 Columbia Bldg., B. C. Heacock, Rep.

Please mention The Automobile Trade Directory

PAINTS and COLORS (Continued)

Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.
 Graves Co., N. Z., 22-26 S. Third St., Philadelphia, Pa.
 Hanline Bros., 22-25 Howard St., Baltimore, Md.
 Hardy Paint & Varnish Co., Oakwood & M. C. R. R., Toledo, O.
 Harrison Works, 3523 Grays Ferry Rd., Philadelphia, Pa.
 Heath & Milligan Mfg. Co., 1833 Seward St., Chicago, Ill.
 Hildreth Varnish Co., 90 West St., New York, N. Y.
 Hoffman Paint & Varnish Co., 3 Medford St., Boston, Mass.
 Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind., "Capitol City."
 Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
 Keystone Paint & Filler Co., Munsey, Pa.
 King—See Chicago White Lead & Oil Co.
 Lowe Bros. Co., 452 E. Third St., Dayton, O.
 Lucas & Co., John, 323-30 Race St., Philadelphia, Pa.
 Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.
 Moore & Co., Benjamin, 281-33 Front St., Brooklyn, N. Y.
 Moser Co., Chas., 215-27 E. Ninth St., Cincinnati, O.
 Mountain Varnish & Color Works, Toledo, O.
 Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J.
 Nice, Eugene E., 268-74 S. Second St., Philadelphia, Pa.
 O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
 Oughto—See Billings-Chapin Co.
 Panvar Co., Bulletin Bldg., Philadelphia, Pa., "Fix-A-Mar."
 Patterson-Sargent Co., E. 38th & St. Clair Sts., Cleveland, O.
 Patton Paint Co., 213 Lake St., Milwaukee, Wis.
 Peerless—See Columbus Varnish Co.
 Pierce Co., F. O., 12 W. Broadway, New York, N. Y.
 St. Louis Surfacter & Paint Co., Arlington Ave. & Terminal Belt Line, St. Louis, Mo.
 Sherwin-Williams Co., 100 Canal St., Cleveland, O.
 Shrack & Co., C., 153 N. Fourth St., Philadelphia, Pa.
 Smith & Co., Edward, Sixth St. & West Ave., Long Island City, N. Y.
 Valentine & Co., 456 Fourth Ave., New York, N. Y.
 Wadsworth, Howland & Co., 141 Federal St., Boston, Mass., "Bay State."
 Willey Co., C. A., 14th & Hancock Sts., Long Island City, N. Y.
 Zinsner & Co., W., 195 William St., New York, N. Y., "Bull's-Eye."

PAINTS and VARNISHES for Fords

Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill., "Ad-el-ite," (See page 267.)
 Ad-el-ite—See Adams & Elting Co.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O.
 Columbus Varnish Co., Columbus, O., "Peerless." (See page 341.)

Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn., "Rie-Nie."
 Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.
 Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.
 Hall-Thompson Co., Dept. A, Hartford, Conn., "Wonder Worker." (See page 655.)
 Hanline Bros., 22-25 Howard St., Baltimore, Md.
 Northwestern Chemical Co., 735 State St., Marletta, O., "Norwesco." (See page 275.)
 Norwesco—See Northwestern Chemical Co.
 Peaslee-Gaulbert Co., Louisville, Ky. (See page 613.)
 Peerless—See Columbus Varnish Co.
 Permatex Co., Sheepshead Bay, N. Y. (See page 277.)
 Rie-Nie—See Durkee-Atwood Co.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill.
 Wonder Worker—See Hall-Thompson Co.

PANELS, Wood

Algoma Panel Co., Algoma, Wis.
 Almasee Veneer & Seating Co., Algoma, Wis.
 American Veneer Co., 15th & Clinton Sts., Hoboken, N. J.
 Buffalo Hardwood Lumber Co., 340 Seneca St., Buffalo, N. Y.
 Cascomade—See United States Plywood Co.
 Dann Bros. & Co., 34 Franklin St., New Haven, Conn.
 Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.
 Dover Mfg. Co., 144 Canoe Pl., Woodhaven, N. Y.
 Eggers Veneer Seating Co., F., 19th St. & Jefferson Ave., Two Rivers, Wis.
 Grand Rapids Veneer Works, 808-900 Front St., Grand Rapids, Mich.
 Haskellite Mfg. Corp., 133 W. Washington St., Chicago, Ill.
 Jansen Mfg. Co., 14th Ave. & Howard St., Detroit, Mich.
 Keyes Products Co., 120 Broadway, New York, N. Y., "Nevasplit."
 Louisville Veneer Mills, 1100 River Rd., Louisville, Ky.
 Michigan Veneer Co., 11th St., Alpena, Mich.
 Nevasplit—See Keyes Products Co.
 New Jersey Veneer Co., 253 W. Railway Ave., Paterson, N. J.
 Roddis Lumber & Veneer Co., Marshfield, Wis.
 United States Plywood Co., 3 W. 14th St., New York, N. Y., "Cascomade."

PANELS and SWITCHBOARDS, Charging

Allen-Bradley Co., 284 Greenfield Ave., Milwaukee, Wis.
 Andrae & Sons Co., Julius, 362 Broadway, Milwaukee, Wis.
 Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis.
 Cutter Co., Geo., Notre Dame & Division Sts., South Bend, Ind.
 Electric Products Co., Cleveland, O.
 F-B Electric & Mfg. Co.—See Fairbanks Co.
 Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.) (See pages 491 to 494.)

Everything is listed under the NOUN or principal word

**PANELS and SWITCHBOARDS,
Charging (Continued)**

- Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo. (See page 725.)
- Friday Machinery & Supply Co., 20 Main St., Sigourney, Ia.
- General Electric Co., Schenectady, N. Y. (See page 697.)
- Hertner Electric & Mfg. Co., 1905 W. 112th St., Cleveland, O.
- Holt Farm Light Co., Ludington, Mich.
- Leonard Electric Co., Ward, Mt. Vernon, N. Y.
- National Electric Controller Co., 154-56 Whitling St., Chicago, Ill.
- R. & N.—See Randall & Noll.
- Randall & Noll, 317 S. 11th St., Lincoln, Nebr. "R. & N."
- Valley Electric Co., 4919 Connecticut Ave., St. Louis, Mo.

PANS, Drip

(For placing under cars in garages or sales rooms to catch any oil or grease that may drip)

- Advance Engineering Co., 6539 Metta Ave., Cleveland, O.
- Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.
- Boyle Mfg. Co., 21 Sutter St., Los Angeles, Cal. (See page 183.)
- Briskin Mfg. Co., 315 S. Hoynes Ave., Chicago, Ill.
- Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
- Cornwall Mfg. Co., Cleveland, O. (See page 845.)
- Cullen-Atkinson Co., 130 Allyn St., Hartford, Conn. "Hartford."
- Dover Stamping & Wfg. Co., 345 Putnam Ave., Cambridge, Mass. (See page 185.)
- Durlach Can & Iron Works, 234 Bridge St., Brooklyn, N. Y.
- Evans Mfg. Co., First Ave. & 21st St., Moline, Ill.
- Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
- Hartford—See Cullen-Atkinson Co.
- Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
- Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
- Lawco—See Lawson Co.
- Lawson Co., F. H., Dept. D., Cincinnati, O. "Lawco." (See page 377.)
- Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
- Murray Auto Parts Mfg. Co., Atlanta, Ga.
- Saginaw Sheet Metal Works, 2060 Genesee Ave., Saginaw, Mich.
- Sexton Can Co., 123 Broad St., Boston, Mass.
- Smyth Garage Pan Mfg. Co., Patchogue, N. Y.
- Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
- Walters Mfg. Co., Fulton Bldg., Pittsburgh, Pa.
- Wemisco—See Western Metal Specialty Co.
- Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemisco."
- Western Radiator & Fender Mfg. Co., 1430 Bush St., San Francisco, Cal.

PANS, Dust

- Automotive Sheet Metal Co., Factory St., & Grand Trunk R. R., Kalamazoo, Mich. "Maco."
- Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.
- Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.
- Brummeler's Sons Co., Wm., 412 Ionia Ave., S. W., Grand Rapids, Mich. "Brusco."
- Brusco—See Brummeler's Sons Co.
- Candler Radiator Co., 1084-86 Jefferson Ave., E., Detroit, Mich. (See page 687.)
- Champion Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.
- Columbus Auto Brass Co., Columbus, O. (See page 381.)
- Cornwall Mfg. Co., Cleveland, O. (See page 845.)
- Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.
- Gander, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. (See page 843.)
- Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
- Maco—See Automotive Sheet Metal Co.
- Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
- Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
- Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.
- Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
- Moline Pressed Steel Co., Fifth St., East Moline, Ill.
- Morrison & Sons, F., 1330 W. 11th St., Cleveland, O.
- Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
- Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
- Mullins Body Corp., 182 Franklin Ave., Salem, O.
- Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
- Powell Pressed Steel Co., Hubbard, O. (See page 949.)
- Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.
- Sheet Steel Products Co., Bryan, O.
- York Corrugating Co., York, Pa. (See page 377.)

PANS, FLOOR—See Pans, Drip**PANS, Radiator Splash, for Fords**

(Sheet metal guard or pan for front of car to prevent splashing of mud on radiator or lamps)

- Gahm-McCormick Co., 806 E. Main St., Streator, Ill. (See page 171.)
- General Mfg. Co., 19 Johanna St., Freeport, Ill.
- Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
- Masco—See Mayer Auto Accessories Corp.
- Mayer Auto Accessories Corp., 333 Washington St., Buffalo, N. Y. "Masco."
- Mosco—See Motor Specialties Co.
- Motor Specialties Co., Beaver St., Waltham, Mass. "Mosco."
- Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.
- Steel Products Co., Rice Lake, Wis.

Everything is listed under the NOUN or principal word

PANS, SOD—See **Pans, Dust**

PAPER BOXES—See **Boxes, Paper**

PAPER, Emery and Sand

American Glue Co., 121 Beverly St., Boston, Mass. "Union."
Baeder, Adamson & Co., Richmond St. & Allegheny Ave., Philadelphia, Pa. "Old Reliable."
Barton & Son Co., H. H., 108 S. Third St., Philadelphia, Pa.
Behr & Co., Herman, 81 Broadway, New York, N. Y. "Brooklyn."
Brooklyn—See Behr & Co.
Carborundum Co., Niagara Falls, N. Y.
Carbalox—See United States Sand Paper Co.
Crystal Bay—See Minnesota Mining & Mfg. Co.
Durite—See Manning Abrasive Co.
Herculundum—See United States Sand Paper Co.
Manning Abrasive Co., 68 George St., Troy, N. Y. "Metalite," "Durite."
Metalite—See Manning Abrasive Co.
Minnesota Mining & Mfg. Co., 564 W. Monroe St., Chicago, Ill. "Crystal Bay."
Old Reliable—See Baeder, Adamson & Co.
Union—See American Glue Co.
United States Sand Paper Co., 1560 Erie Ave., Williamsport, Pa. "Carbalox," "Herculundum."
Wausau Abrasives Co., 118 S. Clinton St., Chicago, Ill. "Wausite."
Wausite—See Wausau Abrasives Co.

PAPER, FRICTION—See **Frictions, Fibre**

PAPER, SAND—See **Paper, Emery and Sand**

PAPER SHIPPING COVERS—See **Covers, Paper and Canvas Shipping**

PARABOLIC REFLECTORS FOR FORDS—See **Reflectors, Headlight**

PARKING LIGHTS—See **Lights, Parking**

PARTERS, CAM-SHAFT BEARING for **Fords**—See **Tools, Cam-Shaft Bearing Parting**

PARTS, BATTERY REPAIR—See **Parts, Storage Battery Repair**

PARTS, DISTRIBUTOR—See **Parts, Magneto**

PARTS, COIL—See **Parts, Magneto**

PARTS, Magneto, Coil and Distributor

A. C. Ignition Co., Marquette Bldg., Detroit, Mich.
Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (Distributors.) (See page 337.)
Automotive Specialty Co., 311 W. 59th St., New York, N. Y. "Taco."
Ban-Rov & Co., 2230 S. Wood St., Chicago, Ill.
Bay State Research & Mfg. Co., 170 Third St., Chelsea, Mass.
Bee Cee—See Brown & Caine.

Brown & Caine, 2317-21 Calumet Ave., Chicago, Ill. "Bee Cee." (See page 271.)
Contact Metals Co., 221 E. 23rd St., Chicago, Ill.

Eastern Parts Mfg. Co., 135 Spring St., New York, N. Y. "Pemko."

Gillfillan Bros. Smelting & Refining Co., 217 W. Sixth St., Los Angeles, Cal.

Gray-Heath Co., 1440 S. Michigan Ave., Chicago, Ill. "Sturdy." (See page 265.)

Guaranteed Magneto Parts Co., 210 W. 54th St., New York, N. Y. (See page 613.)

H. & L. Ignition Parts Mfg. Co., 300 W. Broadway, New York, N. Y.

Hygrade Parts Co., 10 W. 62nd St., New York, N. Y.

J. & B. Mfg. Co., Pittsfield, Mass.

Millwood-Brackett Co., Des Moines, Ia. (See page 327.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Niehoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. (See page 325.)

Otter Mfg. Co., 243 W. 17th St., New York, N. Y.

Pemko—See Eastern Parts Mfg. Co.

Specialty Products Co., 236 South St., Newark, N. J.

Standard Ignition Co., 329 E. Fordham Rd., New York, N. Y. (Distributor.) (See page 357.)

Standard Motor Products Co., 81 Tenth St., Long Island City, N. Y.

Sturdy—See Gray-Heath Co.

Tacso—See Automotive Specialty Co.

Universal Auto Parts Co., 268 Nartilla St., Portland, Ore. (Distributors.) (See page 157.)

Weidenhoff, Joseph, 4352 W. Roosevelt Rd., Chicago, Ill.

PARTS, Orphan Car Repair

(Covering Dealers in Repair Parts for Cars no longer manufactured)

Abbott Motor Car Co., Cleveland, O.

American Motors Parts Co., Washington Ave. & Gelsendorf St., Indianapolis, Ind.

Anchor Motor Car Co., St. Louis, Mo.

Auto Gear Co., 1407 Hennepin Ave., Minneapolis, Minn.

Auto Parts Co., 4114 Olive St., St. Louis, Mo.

Auto Parts & Repair Co., 101 Liberty St., Springfield, Mass.

Auto Salvage Co., 3523-25 Locust St., St. Louis, Mo.

Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines, Ia.

Automotive Gear Works, Atlanta, Ga. (See page 421.)

Babel, L., 371 E. 29th St., Chicago, Ill.

Belcher Engineering Co., 94 Broadway, Cambridge, Mass.

Bergdoll Co., Louis J., Philadelphia, Pa.

Berkshire Motor Co., Pittsfield, Mass.

Boulevard Motor Co., Cambridge, Mass.

Chadwick Engineering Works, Pottstown, Pa.

Chandler, Ralph J., 526 S. Flower St., Los Angeles, Cal.

Chase Truck Service Co., 107 Otisco St., Syracuse, N. Y.

Clark Motor Car Co., Shelbyville, Ind.

Colter, A. W., Toledo, O.

Columbia Auto Repair Co., 19 Buckingham St., Hartford, Conn.

Columbus Buggy Parts Co., 400 Dublin Ave., Columbus, O.

Everything is listed under the NOUN or principal word

PARTS, Orphan Car Repair (Continued)

- Connecticut Auto Parts Co., 533 Franklin Ave., Hartford, Conn.
- Corbin Motor Vehicle Co., New Britain, Conn.
- Council Bluffs Auto Parts Co., Council Bluffs, Ia.
- Cutting Co., Robt. M., 2635 S. Wabash Ave., Chicago, Ill.
- Daniel-Akeley Auto Parts Co., 79-81 Galena Blvd., Aurora, Ill.
- DeKalb Wagon Co., DeKalb, Ill.
- DeTamble Motors Co., Washington Ave. & Gelsendorff St., Indianapolis, Ind.
- Empire Automobile Co., Indianapolis, Ind.
- Enger Motor Car Co., 802 Washington Ave., Indianapolis, Ind.
- Erbes Motor Car Co., L. G., 3654 W. University Ave., St. Paul, Minn.
- Filer & Stowell, Milwaukee, Wis.
- Fort Dodge Auto Wrecking Co., 507 First Ave., Fort Dodge, Ia.
- Frank Co., Paul A., 2349 Michigan Ave., Chicago, Ill.
- Fulton & Gibson, David City, Neb.
- Gaeth Motor Co., 2101-17 Abbey Ave., Cleveland, O.
- Goldberg, H., 1420 S. Eighth St., Philadelphia, Pa.
- Gorey Automotive Parts Co., 354 W. 50th St., New York, N. Y.
- Great Western Automobile Co., Kalamazoo, Mich.
- Gwilliam Co., 23 Flatbush Ave., Brooklyn, N. Y. (See page 102.)
- Haas Electric & Mfg. Co., R., 305-07 E. Monroe St., Springfield, Ill.
- Haberer & Co., Cincinnati, Ohio.
- Hartford Motor Car Co., 410 Main St., Hartford, Conn.
- Hassler Motor Car Co., Indianapolis, Ind.
- Henderson Motor Car Co., 1715 Catherine St., Detroit, Mich.
- Herreshoff Motor Co., 802 Washington Ave., Indianapolis, Ind.
- Hersch Auto Sales & Parts Co., 1970-78 E. 56th St., Cleveland, O.
- Huron Motor Car Co., Dearborn, Mich.
- Indiana Auto Parts & Tire Co., 818 N. Illinois St., Indianapolis, Ind.
- Johnson Service Co., Milwaukee, Wis.
- K. C. Auto Parts Co., 1827 McGee St., Kansas City, Mo.
- Keith Bros., Elkhart, Ind.
- Kelsey Motor Co., Hartford, Conn.
- Krit Motor Car Co., 1715 Catherine St., Detroit, Mich.
- Lawco—See Lawson Co.
- Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 377.)
- Levene Motor Co., 2300 Diamond St., Philadelphia, Pa. (See page 420.)
- Levensgood, A. J., 153 N. Fourth St., Reading, Pa.
- Lion Motor Parts Co., Philadelphia, Pa.
- Longaker Co., V. A., 445-50 N. Capitol Ave., Indianapolis, Ind.
- Longest Bros. Co., 725-29 S. Third St., Louisville, Ky.
- Loper, G. E. Port Jefferson, N. Y.
- Loxier Motor Co., Detroit, Mich.
- Marion Motor Service Co., 430 N. Capitol Ave., Indianapolis, Ind.
- Mason Motor Car Co., 1715 Catherine St., Detroit, Mich.
- Matheson Co., Frank F., 694 Wyoming Ave., Wilkes-Barre, Pa.
- Maxwell Bros. Auto Salvage Co., St. Louis, Mo.
- Meteor Motor Car Co., Shelbyville, Ind.
- Michigan Motor Car Parts Co., Kalamazoo, Mich.
- Motor Corp., rear 1309 Race St., Philadelphia, Pa.
- Muskegon Auto Co., 14-16 W. Clay Ave., Muskegon, Mich.
- Mutual Motors Co., 500 Schenck St., North Tonawanda, N. Y.
- Niagara Motors Corp., Dunkirk, N. Y.
- Pacific Motor Car Exchange Co., 321 W. 53d St., New York, N. Y.
- Pathfinder Co., 802 Washington Ave., Indianapolis, Ind.
- Petrie & Morganthall, Greencastle, Pa.
- Philadelphia Machine Works, 61-67 Laurel St., Philadelphia, Pa.
- Pruyn Co., 683 N. Broad St., Philadelphia, Pa.
- Pullman Motor Car Co., York, Pa.
- Pungs-Finch Auto & Gas Engine Co., Detroit, Mich.
- Puritan Machine Co., 70 Puritan Bldg., Detroit, Mich. (See page 623.)
- Queen City Auto Parts Co., 633 Main St., Cincinnati, Ohio.
- R. C. H. Corp., Detroit, Mich.
- Red Arrow Auto Co., E. River St., Orange, Mass.
- Replacement Parts Co., 1012 Baltimore Ave., Kansas City, Mo.
- Republic Motor Car Co., Youngstown, Ohio.
- Riverside Machinery Depot, 251 St. Aubin Ave., Detroit, Mich.
- St. Louis Car Co., 3000 N. Broadway, St. Louis, Mo.
- Sattler's Machine Shops & Works, 1601 Spring Garden St., Philadelphia, Pa.
- Smith, G. B., 228 Halsey St., Newark, N. J.
- Standard Motor Parts Co., Newcastle, Ind.
- Steele Co., W. M., 93-100 Beacon St., Worcester, Mass.
- Stehle, R. W., 1523 Brandywine St., Philadelphia, Pa.
- Stevens-Duryea Co., Chicopee Falls, Mass.
- Toepfer's Sons, Frank, 45 National Ave., Milwaukee, Wis.
- United Auto Parts Co., Omaha, Neb.
- Walk Hill Garage, 726 Walk Hill St., Mattapan, Mass.
- Walker & Barkman Mfg. Co., 403 Main St., Hartford, Conn.
- Walker & Barkman Mfg. Co., Hartford, Conn.
- Warshawsky & Co., 1915-31 S. State St., Chicago, Ill. (See page 495.)
- Wichita Auto Wrecking Co., 307 West Douglas Ave., Wichita, Kans.
- Wilco Co., 172 Griswold St., Detroit, Mich.
- Wolf Auto Parts & Tire Co., I., 619 N. Illinois St., Indianapolis, Ind.
- Wyckoff Auto Salvage Co., Sioux City, Iowa.
- York Motor Car Co., 127 S. Duke St., York, Pa.
- Zimmerman Mfg. Co., Auburn, Ind.

PARTS, Repair, for Fords

(Covering Dealers in Repair Parts for Ford Cars who advertise in this Publication)

Bridgers Co., J. D., Florence, S. C.
(See page 727.)

Everything is listed under the NOUN or principal word

PARTS, Repair, for Fords (Continued)

- Chicago Standard Parts Co., 39 W. Adams St., Chicago, Ill. (Distributors.) (See page 121.)
- Dunham Co., Thos., Aurora, Ill. (See page 145.)
- Felton-Houston Co., 1148 S. Michigan Blvd., Chicago, Ill. (See page 415.)
- Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.
- Newton Mfg. Co., Plainville, Conn. (See page 315.)
- Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 613.)
- Sherman-Klove Co., 4640-48 W. Harrison St., Chicago, Ill. (See page 743.)

PARTS, Rim

- Thompson-Neaylon Mfg. Co., 3109 S. Canal St., Chicago, Ill.
- Stone Mfg. Co., Chicago, Ill. (See page 707.)

PARTS, Speedometer Repair

- General Speedometer Repair Co., 119-21 W. 63rd St., New York, N. Y.
- Ogden Mfg. Co., Plymouth, Ind.
- Saco—See Speedometer Accessories.
- Speedometer Accessories, Plymouth, Ind. "Saco."

PARTS, Storage Battery Repair

- Advance Battery Mfg. Co., 122-24 S. Sixth St., Louisville, Ky.
- American Storage Battery Parts Co., 650-60 E. 163rd St., Cleveland, O.
- Am-plus Storage Battery Co., 741-45 W. Van Buren St., Chicago, Ill.
- Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill. (See page 94.)
- Automotive Electrical Sales Co., 2637 S. Michigan Ave., Chicago, Ill. (Distributors.) (See page 337.)
- Banner Battery Co., 1219 S. Wabash Ave., Chicago, Ill.
- Bl & 4 Battery Co., Calumet & Gostlin Sts., Hammond, Ind. (See page 97.)
- C. & B. Battery Co., 2507 Cottage Grove Ave., Chicago, Ill.
- Camel—See Campbell Electric Co.
- Campbell Electric Co., 1531 Wyandotte St., Kansas City, Mo. "Camel."
- Champion Storage Battery Corp., 193 Church St., Poughkeepsie, N. Y.
- Continental Storage Battery & Equipment Co., 400 W. 23rd St., New York, N. Y.
- Cooper Storage Battery Mfg. Co., Dunbar & B. & O. R. R., Cincinnati, O.
- Ferry Mfg. Co., 2119 S. Fourth St., St. Louis, Mo.
- General Storage Battery Co., 2005 Locust St., St. Louis, Mo.
- Hobbs Storage Battery Co., 1231-35 S. Olive St., Los Angeles, Cal.
- McLean Storage Battery Co., 721 Frankfort St., Cleveland, O.
- Price Storage Battery Co., W. F., 1618 N. Broad St., Philadelphia, Pa.
- R. T. Sales Co., 226 N. Adams St., Green Bay, Wis.
- Radio Storage Battery Co., 1507 Franklin St., San Francisco, Cal.
- Service Station Supply Co., Wilkesburg Station, Pittsburgh, Pa. (See page 357.)
- Smith Co., Harrison, Oklahoma City, Okla.

Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa.

PARTS, Wood Automobile Body

- Builders' Mfg. Co., 824-30 N. Wells St., Chicago, Ill. (See page 123.)
- Detroit Auto Dash Co., 1501 E. Philadelphia Ave., Detroit, Mich.
- Hanson-Ward Veneer Co., Bay City, Mich.
- Mengel Co., Louisville, Ky.
- Michigan Truck & Lumber Co., Holly, Mich.
- Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich.

PASTE, HAND—See Soaps, Hand

PASTE, POLISHING—See Polishes, Metal

PASTE, SOLDERING—See Flux, Soldering

PASTE, Trimmers

- Buckeye Paste Co., 270 S. Wall St., Columbus, O.

PATCHES, Tire Repair

(See also Shoes, Inner Tire; also Sleeves, Tire Repair)

- Acme—See Chicago Tire Goods Co.
- Acme—See Freer-Petty Auto Accessories Co.
- Acme—See Vulcan Spark Plug Mfg. Co.
- Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 871.)
- All Ready—See Miller Rubber Co.
- Alwas-Hold Auto Products Co., 6929 Stony Island Ave., Chicago, Ill.
- American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Rub-R-Bak." "Vulkless."
- American Rubber & Tire Co., 100 Beech St., Akron, O. "Cling-Tite."
- Apache—See Phoenix Laboratories.
- Arlington—See Voorhees Rubber Mfg. Co.
- Atlas Rubber Co., 326 W. Grand Ave., Chicago, Ill.
- Auto Boot Mfg. Co., Hutton Bldg., Spokane, Wash. "Porcupine."
- Auto-Joy—See Bart Mfg. Co.
- Auto Specialties Mfg. Co., Buffalo, N. Y. "Bents All." (See page 343.)
- Auto Specialty Mfg. Co., 418 S. Barstow St., Eau Claire, Wis. "Stuck-Tite."
- Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."
- Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo. "Zip."
- Bart Mfg. Co., 421 S. Fifth St., Minneapolis, Minn. "Auto-Joy."
- Bear-Cat Products Co., Capitol Hill Sta., Oklahoma City, Okla. "Sta-Tite."
- Beats-All—See Auto Specialties Mfg. Co.
- Black Panther Corp., 2406 S. Robinson St., Oklahoma City, Okla.
- Black—See Sure-Tite Mfg. Co.
- Blaylock Tire & Rubber Co., G. E., 1811 N. Charles St., Baltimore, Md.
- Blue Ribbon—See International Metal Polish Co.
- Boggs Co., Kirk A., Fort Dodge, Ia. "Yankee Grip."
- Born Vulcanizing & Tire Agency, Main & Church Sts., Belleville, Ill.

Everything is listed under the NOUN or principal word



The only trade-marked tube patch. Made of pure white Para gum rubber. Fully proven and guaranteed.

A patch of highest quality. Will remain fresh for almost two years before use.



What Las-Stik Is.

LAS-STIK is the strongest tube patch made, having a breaking test record of 2600 lbs. and a heat test record of 250 degrees. Las-Stik is 3-64 in. thick, which is the same as the average inner tube, and weighs 4 pounds per square yard. Stretched to full capacity and nicked with a scissors in several places, this patch will not tear.

What Las-Stik Does.

Las-Stik repairs permanently any tube leak from the smallest puncture to a 17 in. blowout. When a tube having a Las-Stik Patch is inflated, the stretch and pull-back of the patch is about equal to the stretch

and pull-back of the tube itself. Thus the Las-Stik Patch soon vulcanizes itself in and becomes an inseparable part of the tube, lying flat and smooth during the life of the tube.

Conveniently Carried and Easily Applied.

Las-Stik is made in three sizes and packed in round screw top containers conveniently carried in any tool kit or door pocket. Anyone can easily apply Las-Stik in a few moments, after which the tube is ready for immediate use. The cost to seal a small puncture forever is about one cent.

LAS-STIK PATCH MFG. CO., HAMILTON, O.

Export Office:
Las-Stik Patch Manufacturing Company
1227 Broadway, New York City

Please mention The Automobile Trade Directory

PATCHES, Tire Repair (Continued)

- Bowes Co., Robert M., 124-26 E. Ohio St., Indianapolis, Ind. "Seal-Fast."
- Boyd's Patch Co., 613 W. Grand Ave., Des Moines, Ia.
- Buckeye Refiner Producing Co., Lima, O. (See page 931.)
- Buffalo Bull—See Hoffeld & Co.
- Bull Dog—See Polson Rubber Co.
- Bull Dog—See Eastern Auto Specialty Co.
- Bull Dog Tire Patch Co., 626-28 E. Locust St., Des Moines, Ia.
- Bull Grip, 57-61 Eugenia St., Atlanta, Ga.
- Busy Bee Motor Car Co., 4451 Manchester Ave., St. Louis, Mo.
- Cactus—See Automotive Supply Mfg. Co.
- Caplan Bros., 77 Bedford St., Boston, Mass. "Tiger Grip."
- Carbo-Line Co., Hastings, Neb. "Defiance Never-Slip."
- Champion Mfg. Co., Lincolnton, N. C. "Lincoln."
- Chicago Tire Goods Co., 1216 Webster Ave., Chicago, Ill. "Acme."
- Cling-Tite—See American Rubber & Tire Co.
- C. O. T.—See Tingley & Co.
- Continental Rubber Works, 1903 Liberty St., Erie, Pa. "Vitalite."
- Cooper—See Giant Tire & Rubber Co.
- Cord-Wyckoff Tire & Rubber Co., 416 Douglas St., Sioux City, Ia.
- Cox, David H., 812 Chestnut St., Roselle, N. J.
- Cross—See General Tire & Rubber Co.
- Dan Patch Co., 329 Third St., La Salle, Ill.
- Dannenhirsch Co., 1905 W. Dauphin St., Philadelphia, Pa. "Danno."
- Danno—See Dannenhirsch Co.
- Defiance Never-Slip—See Carbo Line Co.
- Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga. "Holdfast."
- Dickard-Marx Rubber Co., Monroe, La. "Styx."
- Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind.
- Dow Co., Louisville, Ky. (See page 157.)
- Dur-a-bul—See Durham Mfg. Co.
- Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-No."
- E-Fec-Tiv—See Permatite Mfg. Co.
- E-Z Way—See Eastern Auto Specialty Co.
- Eagle Grip—See Mormiles Co.
- Eastern Auto Specialty Co., 926 Columbia St., Utica, N. Y. "Bull Dog." "E-Z Way."
- Eastern Rubber Co., Penna. Ave. & Brown St., Philadelphia, Pa. "Magic."
- Eckolastic—See Eckrode Rubber Co.
- Eckrode Rubber Co., 118-22 Adams St., Newark, N. J. "Eckolastic."
- Economy Auto Supply Co., 268 Halsay St., Newark, N. J. (New Jersey Distributors for "Vulco" Patches.) (See page 495.)
- Edelstone Fabric Co., Wm. W., 51 Chardon St., Cambridge, Mass. "Wedco."
- Elgin Motor Power Mfg. Co., 416 Third Ave., Cedar Rapids, Ia.
- Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "Peerless."
- Ever-Grip Mfg. Co., 2106 Main St., Peoria, Ill.
- Everloo—See Wood Co.
- Falls Rubber Co., Cuyahoga Falls, O.
- Farr's Sure-Hold Tire Cement Co., 114 Lawrence St., New York, N. Y. "Stays-Put."
- Federal Rubber Co. (Cudahy), Milwaukee, Wis.
- Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
- Fisher Mfg. Co., 735 O St., Lincoln, Neb.
- Flier-Petty Auto Accessories Co., 1421 Olive St., St. Louis, Mo. "Acme."
- 4-A Products Co., 3103 Downing St., Denver, Colo. "Zip."
- Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
- General Tire & Rubber Co., E. Market St., Akron, O. "Major." "Cross."
- Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O. "Cooper."
- Goodrich Co., B. F. S. Main St., Akron, O.
- Goodyear Tire & Rubber Co., Akron, O.
- Gorilla—See McCandless & Son Mfg. Co.
- Griptite—See St. Louis Rubber Cement Co.
- Hadley Bros.-Uhl Co., 2948-52 W. Pine Blvd., St. Louis, Mo. "Okeh Speed."
- Hall-Thompson Co., Dept. A, Hartford, Conn. "Vulco-Visco." (See page 655.)
- Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
- Han-de-Pach—See Palmer Tire Co.
- Hastee—See Johnson & Son.
- Henkins, A. C., Henry, Ill. "Shoor Grip."
- Highway Rubber Corp., 1009 Chestnut St., St. Louis, Mo.
- Hoffeld & Co., R., 61-69 Carroll St., Buffalo, N. Y. "Buffalo Bull."
- Hold-Fast—See Polson Rubber Co.
- Holdfast—See Diamond Holdfast Rubber Co.
- Horsey Products Co., 4815 Lexington Ave., Cleveland, O.
- Howe Rubber Corp., Codwise Ave., New Brunswick, N. J.
- Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
- Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 835.)
- International Metal Polish Co., Quill St. & Belt R.R., Indianapolis, Ind. "Blue Ribbon."
- Iowa Cord Tire Co., Fleming Bldg., Des Moines, Ia.
- Jackels & Campbell Co., 1622 McGee St., Kansas City, Mo.
- Jiffy—See Johnstown Rubber Co.
- Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Hastee."
- Johnstown Rubber Co., Johnstown, Pa. "Jiffy."
- Jumbo—See Super-Vulcanizer Mfg. Co.
- Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Leak-Nit."
- Las-Stik Patch Mfg. Co., Hamilton, O. (See page 619.)
- Leak-Nit—See Keystone Rubber Mfg. Co.
- Leak Proof Mfg. Co., 18 N. Third St., Vincennes, Ind.
- Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.
- Legnard Co., A. B., Waukegan, Ill.
- Lincoln—See Champion Mfg. Co.
- Locktite Patch Co., Detroit, Mich. (See page 621.)
- Lox-It—See Superior Fabric Patch Co.
- McCandless & Son Mfg. Co., A. C., 412 N. Market St., Wichita, Kans. "Gorilla."
- Maglo—See Morse Co.
- Maglo—See Eastern Rubber Co.
- Magie Auto Devices Co., Lynbrook, N. Y.
- Major—See General Tire & Rubber Co.
- Malco—See Malouf Co.
- Malouf Co., B. I., 146 S. W. Temple St., Salt Lake City, Utah. "Malco."
- Manhattan Rubber Mfg. Co., Willett St., Passaic, N. J.
- Mengo Products Co., 537 Rosedale St. (Wilksburg), Pittsburgh, Pa. "Stictite."
- Mid West Co., 30 Iowa Ave., S. W., Grand Rapids, Mich.
- Michelin Tire Co., Milltown, N. J.
- Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
- Miller Rubber Co., Akron, O. "All Ready."
- Miller's—See Quick-Fix Tire Patch Co.

Everything is listed under the NOUN or principal word

LOCKTITE TIRE PATCH

Repairs cuts, punctures and blowouts in two minutes.

Outlasts the tube.

Patented reinforcing makes it strongest. Standard equipment on 25 cars and trucks proves it best.

Liberal discounts. Equal number of FREE packages with every order.

Write now

LOCKTITE PATCH COMPANY
Detroit, Mich. Windsor Ont., Canada



Rubber-Weld Welds Rubber and Permanently Repairs All Rubber Goods

without heat
without cement
without gasoline
without waiting

The superiority of the Rubber-Weld Process over the old-fashioned method of rubber repairing is due to a new and exclusive principle by which the rubber of the damaged article is again reduced to a state of raw rubber, thus presenting a neutral and negative surface without which the successful repair of rubber articles is impossible.

Rubber-Weld has no competition; it sells on sight and no motorist who has once tried it will thereafter do without it. It welds and patches (no matter how large the cut or serious the damage).

Casings Inner Tubes Step Plates Rubber Blankets Rubber Mats Side Curtains Tops Rubber Boots	Hot Water Bottles Air Cushions Ice Bags Syringes Rubber Gloves Garden Hose Gas Tubing Bathing Caps
--	---

and a multitude of other rubber articles

Rubber-Weld makes a quick-selling article that need only be displayed to find ready buyers. It is guaranteed to give satisfaction, or money refunded.

Dealers Write for Information

Rubber-Weld Company
781 Tremont Street, Boston, Mass.



THE PATCH THAT CAN'T LET GO

Weldo Patches make every tube repair a welded, permanent job in which tube and patch become one. Yet Weldo requires no vulcanizing, no heat, no gasoline—and the tube may be used immediately.

That's why motorists like Weldo, why dealers find it a quick and profitable seller.

Jobbers, dealers—write for interesting details and samples.

Weldo Patch Manufacturing Co.
160 Fifth Ave.
NEW YORK CITY

PATCHES, Tire Repair (Continued)

- Moco Co. of America, 13th & Santa Fe Sts., Oklahoma City, Okla. "Monkey Grip."
- Money-Back Laboratories, 5 N. Dewey St., Oklahoma City, Okla.
- Monkey Grip—See Moco Co. of America.
- Mormiles Co., 416 Sherman St., Chicago, Ill. "Eagle Grip."
- Morse Co., L. E., 205 N. Hyde Park Ave., Scranton, Pa. "Magic."
- Nation Co., 332 W. 16th St., Los Angeles, Cal.
- National Rubber & Specialties Co., 4423-39 Chickering Ave., Cincinnati, O. "Red Cross."
- Never-Creep—See United States Tire Co.
- Newark Rubber Co., Schley St., Garfield, N. J.
- Niagara Rubber Mfg. Co., 246-48 Herman St., Buffalo, N. Y.
- Northwestern Chemical Co., 785 State St., Marietta, O. "Rubrback."
- (See page 275.)
- Nu-Back Mfg. Co., 213-15 S. Second St., St. Louis, Mo. "Vulca-Nite."
- NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
- Okeh Spee-D—See Hadley Bros.-Uhl Co.
- Paimer Tire Co., 220-22 W. Sixth Ave., Topeka, Kans. "Han-De-Pach."
- Peerless—See Eno Rubber Co.
- Peerless Mfg. Corp., 1522-24 St. Louis Ave., Kansas City, Mo. "Sta-tite."
- Pennsylvania Rubber Co. of America, Jeanette, Pa.
- Perma-Loc Mfg. Co., Wilkes-Barre, Pa. (See page 623.)
- Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
- Perry Auto Co., 203 Seventh St., Pittsburgh, Pa. "Security."
- Phoenix Laboratories, 704 Polk St., San Francisco, Cal. "Apache."
- Pioneer Rubber Products Co., Michigan Ave. & Kansas St., St. Louis, Mo.
- Polson Rubber Co., 1657 Doan Ave., Cleveland, O. "Bull Dog," "Hold-Fast."
- Porcupine—See Auto Boot Mfg. Co.
- Pronto Mfg. & Sales Co., 706 S. 24th St., Omaha, Neb.
- Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
- Quick-Fix Tire Patch Co., 428 Good Blk., Des Moines, Ia. "Miller's."
- Quick-Tite Patch Co., 20 Market St., Amsterdam, N. Y.
- Racine Rubber Co., Racine, Wis. (See page 867.)
- Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
- Red Cross—See National Rubber & Specialties Co.
- Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
- Rie-Nie—See Durkee-Atwood Co.
- Rub-Rak—See American Automobile Accessories Co.
- Rubrback—See Northwestern Chemical Co.
- Rubber Weld Co., 781 Tremont St., Boston, Mass. (See page 621.)
- Ryden Supply Co., 202 E. Lake St., Minneapolis, Minn. "Shurstik."
- S-V—See Williams Mfg. Co.
- St. Louis Rubber Cement Co., 3046 Lambda Ave., St. Louis, Mo. "Griptite."
- Seal-Fast—See Bowes Co.
- Security—See Perry Auto Co.
- Shoorgrip—See Henkins, A. C.
- Shurstik—See Ryden Supply Co.
- Slade Co., Ithaca, Mich.
- Spencer Co., W. E., 1 Park Pl., New York, N. Y. "Vulpa."
- Sta-tite—See Peerless Mfg. Corp.
- Stays-Put—See Farr's Sure-Hold Tire Cement Co.
- Stephens Rubber Co., A. J., 1426 Chestnut St., Kansas City, Mo.
- Stictite—See Mengo Products Co.
- Stitch-in-Time—See Wood Co.
- Stuck-Tite—See Auto Specialty Mfg. Co.
- Styx—See Dickard-Marx Rubber Co.
- Super-Vulcanizer Mfg. Co., South West Temple, Salt Lake City, Utah. "Jumbo."
- Superior Fabric Patch Co., Midlothian, Tex. "Lox-It."
- Sure-Seal—See Van Cleef Bros.
- Sure-Stay—See Torkelson Mfg. Co.
- Sure-Tite Mfg. Co., Midlothian, Tex. "Black."
- Surestik—See Ryden Supply Co.
- Tiger Grip—See Caplan Bros.
- Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J. "C. O. T."
- Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn. "Sure-Stay."
- Triangle Rubber Co., Oklahoma City, Okla.
- Twentieth Century Tire Protector Co., Midlothian, Tex.
- United States Tire Co., 1790 Broadway, New York, N. Y. "Never-Creep."
- (See page 863.)
- Van Cleef Bros., 7769-11 Woodlawn Ave., Chicago, Ill. "Sure-Seal."
- Vitalic—See Continental Rubber Works.
- Voorhees Rubber Mfg. Co., 26-56 Bostwick Ave., Jersey City, N. J. "Arlington."
- Vul-Tex Mfg. Co., 140 E. Lake St., Minneapolis, Minn.
- Vulca Laboratories, 142 Second St., San Francisco, Calif.
- Vulca-Nite—See Nu-Back Mfg. Co.
- Vulcan Spark Plug Mfg. Co., 1421 Olive St., St. Louis, Mo. "Acme."
- Vulco—See Gates Rubber Co.
- Vulco-Visco—See Hall-Thompson Co.
- Vulkless—See American Automobile Accessories Co.
- Vulpa—See Spencer Co.
- Vultite Rubber Co., Bridgeport, Conn.
- Wedco—See Edystone Fabric Co.
- White Mule, Inc., 211 S. Illinois Ave., Carbondale, Ill.
- Weldo Patch Mfg. Co., 160 Fifth Ave., New York, N. Y. (See page 621.)
- Williams Mfg. Co., 1800 Carman St., Camden, N. J. "S-V."
- Wood Co., W. C., Sixth Ave. S. E. & University Ave., Minneapolis, Minn. "Everlog," "Stitch-in-Time."
- Yankes Grip—See Boggs Co.
- Zip—See Baker-Lockwood Mfg. Co.
- Zip—See 4-A Products Co.
- Zip Mfg. Co., (Rosedale) Kansas City, Mo.

PATCHES, Top Repair*(For repairing mohair or other fabric tops)*

- Auto Products Mfg. Co., Buffalo, N. Y. "Rub-R-Tite."
- Auto Specialties Mfg. Co., Buffalo, N. Y. "Beats-All." (See page 343.)
- Beats-All—See Auto Specialties Mfg. Co.
- Cementon—See Perkins-Campbell Co.
- Cincinnati Auto Specialty Co., 812-14 Main St., Cincinnati, O. "Stik-Tite."

Everything is listed under the NOUN or principal word

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ALL PARTS NEW

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Partial List of Cars Supplied

Abbott	Little
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Berliet	Matheson
Bridges-Detroit	Michigan
Brook Electric	Monarch
Camero	Northern
Car-Nation	Owen
Cartecar	Palmer-Singer
Chevrolet Model "Q"	Pathfinder
Chevrolet Model "L"	Pontiac-Chassis
Crescent	Prismo
Cutting	Pullman
Detroit	Quon
Elgin Tractor	Rainier
Elmore	Regal
Emerson	Reliable-Dayton
E. M. F.	Ross
Everett	Scripps-Seath Cycle Car
F. A. L.	Speedwell
Fisher	Standard Detroit Tractor
Flinders	Stoddard-Dayton
Grabowky	Sun
Havers	Trumbull
Henderson	Tumbly
Hirsch	Warren
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Imperial	Welch-Detroit
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Eastern Branch:

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PERMA-LOC PRODUCTS

Perma-Loc Patch

Fabric Backed or Rubber Backed

Priced right and
stocked by most
jobbers and dealers
in the East.

Four Sizes

50c

\$1.00

1.50

6.00



Perma-Loc Dam-A-Leak

A liquid radiator cement. Saves
the motorist time and money.

Retail 75c



High
grade
moulded
and cured,
all new
fabric
Blowout
patch.

Perma-Loc Top Dressing

For dyeing and waterproofing automobile
tops of every material. Retail 95c pint,
\$1.65 qt., 1/2 gal. \$3.

Radiator Cement (Powder)	75c
Carbon Remover	60c \$1.00 \$1.50
Rubber Putty Kit	65c
Valve Grinding Compound, 4 oz. double end, coarse and fine	35c
One Pound cans, coarse or fine	\$1.00
Mechanics special, fast cutting, 1 1/4 pounds net	\$1.50
Radiator Cleaner	50c
Patching Cement	10c 15c 40c
Rim and Gasket Cement	20c 50c 85c
In quarts	\$1.50
In gallons	\$4.00

If your Jobber does not stock our goods you
may order direct from us, giving Jobber's
name.

Perma-Loc Manufacturing Co.

Wilkes-Barre, Penna.

PATCHES, Top Repair (Continued)

Craft—See Wood-Craft Co.

Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."

Perkins-Campbell Co., Cincinnati, O. "Cementon." (See page 289.)

Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.

Rub-R-Tite—See Auto Products Mfg. Co.

Stik-Tite—See Cincinnati Auto Specialty Co.

Whiz—See Hollingshead Co.

Wood-Craft Co., 1486 Marshall Ave., St. Paul, Minn. "Craft."

PATCHING BUFFERS—See Buffers, Tube Patching**PATCHING CEMENT—See Cement, Tire Repair****PATTERN MAKERS**

Acme Pattern & Machine Co., 1553-59 Niagara St., Buffalo, N. Y.

Acme Steel & Malleable Iron Works, 245 Millitary Rd., Buffalo, N. Y.

Ajax Pattern Works, 680 Fort St. E., Detroit, Mich.

American Pattern Works Co., 1551 W. Market St., York, Pa.

Banner Pattern Co., Columbus, O.

Beatty Co., J. M., Imperial-Power Bldg., Pittsburgh, Pa.

Blit-Rite—See Keystone Pattern Works.

Brighton Pattern Co., Beaver Falls, Pa.

Bronx Pattern & Model Works, 147 E. 126th St., New York, N. Y.

Buffalo Pattern Works, 830 Hirtel Ave., Buffalo, N. Y.

Cameron & Kaulfers Co., 56 Marshall St., Elizabeth, N. J.

Central Pattern Works, 1352 Market Ave., S., Canton, O.

Central Service Corp., 1607 Merchants' Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)

Chester Pattern Co., Chester, Pa.

Cohoes Iron Foundry & Machine Co., 37 Va Rensselaer St., Cohoes, N. Y.

Collamer Machine Works, 1214 E. 152d St., Cleveland, O.

Des Moines Pattern & Model Works, 121 E Walnut St., Des Moines, Ia.

Edam Pattern Co., G. A., 8123 Scranton Rd., Cleveland, O.

Elizabeth Pattern Works, Fourth & Livingston Sts., Elizabeth, N. J.

Emmert Mfg. Co., W. Main St., Waynesboro, Pa.

Eppenbach, Wm., 231 Vernon Ave., Long Island City, N. Y.

Forster Pattern Works, J. G., 143 S. Delaware St., Indianapolis, Ind.

G & O Pattern Works, 754 S. Pierce St., Milwaukee, Wis.

Griffin & Co., Henry C., 143-54 Varick St., New York, N. Y.

Gumphert & Sons Co., George A., 240-42 Cherry St., Philadelphia, Pa.

Hartford Pattern & Model Co., Hartford, Conn.

Hawkeye Pattern Works, 707 W. Second St., Davenport, Ia.

Hunter Co., Thomas J., 310-16 N. 11th St., Philadelphia, Pa.

Jessup Pattern Works, Stephen C., 245-44 Roosevelt Ave., Salem, O.

Jurack Co., Chas., 600 S. Pierce St., Milwaukee, Wis.

Keystone Pattern Works, 1307 Jackson St., Omaha, Neb. "Blit-Rite."

Kunst Co., John, 43 Murray St., New York, N. Y.

La Crosse Pattern Works, Rose & Gillett Sts., La Crosse, Wis.

Liberty Tool & Gauge Works, 338 Bernon St., Woonsocket, R. I.

Locke Pattern Works, 217-21 Woodward Ave., Detroit, Mich.

Louisville Pattern Works, 119 N. Fourth Ave., Louisville, Ky.

Messenger, George T., 609 W. Cambria St., Philadelphia, Pa.

Michigan Pattern & Machine Works, 2423-39 E. Jefferson Ave., Detroit, Mich.

Milwaukee Pattern & Mfg. Co., 1195-99 30th St., Milwaukee, Wis.

Modern Pattern & Machine Co., 451-53 Monroe St., Detroit, Mich.

Modern Pattern Co., 140 Clinton St., Milwaukee, Wis.

Mt. Penn Pattern Works, 818 Court St., Reading, Pa.

Nobach Pattern Works, W. J., 411-13 S. Clinton St., Chicago, Ill.

Pattern & Castings Co., 217 N. Water St., Saginaw, Mich.

Peerless Pattern & Body Co., 1754 Main St., Buffalo, N. Y.

Peerless Pattern Works, 405 E. Madison St., South Bend, Ind.

Remmers Pattern Co., 919 Benton St., St. Louis, Mo.

Reynolds & Currie, 141 Maple St., Waterbury, Conn.

Ritter Pattern & Wood Working Co., 233 Canal St., New York, N. Y.

Sandusky Pattern Co., King & Monroe Sts., Sandusky, O.

Sharp Bros., 39 Cottage St., Bayonne, N. J.

Silent Holst Co., 302-04 McDougal St., Brooklyn, N. Y.

Smith & Co., E. M., Peoria, Ill.

Sonith Pattern Works, 212-214 S. Pennsylvania St., Indianapolis, Ind.

Standard Pattern Works, 688 E. Fort St., Detroit, Mich.

Standard Pattern Works, York, Pa.

Standard Pattern Works Co., 6327 St. Clair Ave., Cleveland, O.

Stanley Foundry Co., North St. & Davis Ave., N. W., Grand Rapids, Mich.

Thorn Machine Tool Works, 107 N. Franklin St., Syracuse, N. Y.

Turner, Ira B., Amber & Dauphin Sts., Philadelphia, Pa.

Victor Tool Co., Waynesboro, Pa.

Wallace & Co., John D., 1461-65 W. Jackson Blvd., Chicago, Ill.

Western Pattern & Mfg. Co., 1218 Washington Ave., Racine, Wis.

PATTERNMAKERS' LATHES—See Lathes, Woodworking**PAY CHECKS—See Checks, Brass Time, Tool and Pay****PEDAL ENGINE STARTERS—See Starters, Manual****PEDAL EXTENSIONS—See Extensions, Pedal**

Everything is listed under the NOUN or principal word

PEDAL GRIPS—See Grips, Pedal

PEDAL LOCKS FOR FORDS—See Locks, Pedal

PEDAL PADS—See Grips, Pedal

PEDAL PLATES—See Plates, Heel and Pedal

PEDAL SHIELDS FOR FORDS—See Deflectors, Heat

PEDAL STARTERS—See Starters, Manual

PEDAL STOPS—See Stops, Pedal for Fords

PEDALS, ACCELERATOR—See Pedals, Special Accelerator

PEDALS, ACCELERATOR, FOR FORDS—See Accelerators, Foot

PEDALS, CUT-OUT—See Pedals, Horn and Cut-Out

PEDALS, Horn and Cut-Out

Allen Co., 23-25 Broadway, Camden, N. J.
Au-To Compressor Co., 308 S. Mulberry St.,
Wilmington, O. "Oro."

Barco Mfg. Co., 312-32 W. Illinois St., Chicago,
Ill.

Brewer Tichenor Corp., Cortland, N. Y.

Cassidy Co., Inc., Edward A., 23 W. 43d St.,
New York, N. Y. (Sales Department for
G. Piel Co., Long Island, N. Y.)

Cooper Mfg. Co., Marshalltown, Ia.
(See page 574.)

Cox Brass Mfg. Co., Albany, N. Y.
(See page 168.)

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleve-
land, O.

Emco Mfg. Co., Binghamton, N. Y.

Ewald—See Zinke Co.

Fulton Co., 75th & National Ave., Mil-
waukee, Wis. (Distributors.)
(See pages 569 to 574.)

Gabriel Mfg. Co., 1421 E. 40th St., Cleveland,
Ohio.

Gemco Mfg. Co., 606 S. Pierce St., Mil-
waukee, Wis. (See page 107.)

Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave.,
E., Detroit, Mich.

Larimer Co., 52 S. River St., Aurora, Ill.

Metal Stamping Co., Long Island City,
N. Y. (See page 168.)

Oro—See Au-To Compressor Co.

Petry Co., N. A. 323-34 N. Randolph St., Phila-
delphia, Pa.

Piel Co.—See Cassidy Co.

Romort Mfg. Co.—See Zinke Co.

Stryker, C. W., 240 Shonnard St., Syracuse,
N. Y.

Western Brass Mfg. Works, Marshall
Blvd. & 21st St., Chicago, Ill.
(See page 471.)

Whitehouse Mfg. Co., E. A., 42-54 Elm
St., Newark, N. J. (See page 174.)

Zinke Co., 1323-25 Michigan Ave., Chicago,
Ill. (Sales Department for Romort Mfg.
Co., Oakfield, Wis. "Ewald.")

PEDALS, MUFFLER CUT-OUT—See Ped-
als, Horn and Cut-Out

PEDALS, RATCHET—See Pedals, Horn
and Cut-Out

PEDALS, Special Accelerator

Gemco Mfg. Co., 606 S. Pierce St., Mil-
waukee, Wis. (See page 107.)

Hunt & Co., E. J., Dayton, O. (Sales Repre-
sentatives for Thomson Mfg. Co., S. H.,
Dayton, O.)

Ideal Brass Works, 560 N. Elder Ave., In-
dianapolis, Ind.

Imperial Brass Mfg. Co., 1234 W. Harri-
son St., Chicago, Ill. "Imperial-
Wixon." (See page 173.)

Imperial-Wixon—See Imperial Brass Mfg. Co.
Mahr Specialty Co., 910 18th Ave., S. E., Min-
neapolis, Minn.

Mechanical Utilities Corp., 1348 N. Clark
St., Chicago, Ill. (See page 401.)

Thomson Mfg. Co.—See Hunt & Co.

PENNANT HOLDERS—See Holders, Flag,
Pennant and Emblem

PENNANTS AND FLAGS—See Flags, Pen-
nants and Emblems

PERIODICALS—See Books and Periodicals.

PET COCK OPENERS FOR FORDS—See
Wrenches, Oil Cock

PET COCKS—See Cocks

PHOSPHOR BRONZE WIRE—See Wire,
Phosphor Bronze

PHOSPHORESCENT COMPOUNDS—See
Paints, Luminous

PHOSPHORESCENT PAINTS—See Paints,
Luminous

PICKING MACHINES—See Machines, Hair
Picking

PICNIC TABLES—See Tables, Picnic and
Lunch

**PIN INSERTING TOOLS, VALVE FOR
FORDS**—See Tools, Valve Pin Inserting

PINIONS, FIBRE—See Gears and Pinions,
Rawhide

PINIONS, METAL—See Gears and Pinions,
Metal

PINIONS, RAWHIDE—See Gears and Pin-
ions, Rawhide, Fibre and Fabric

PINIONS, SPEEDOMETER—See Gears and
Pinions, Speedometer

PINS, Cotter

American Chain Co., Bridgeport, Conn.
"Campbell." (See page 329.)

American Cotter Pin Co., Park Bldg., Pitts-
burgh, Pa. "Kelkotters."

Automotive Supply Mfg. Co., 2005½ Main St.,
Dallas, Tex.

Blake & Johnson Co., Waterbury, Conn.
(See page 737.)

Brooks & Sons, M. S., Chester, Conn.

Campbell—See American Chain Co.

Cobb & Drew, Plymouth, Mass.

Falls Rivet Co., Kent, O.

Hindley Mfg. Co., John St., Valley Falls, R. I.

Hobbs Mfg. Co., 26 Salisbury St., Worcester,
Mass.

Hubbard Spring Mfg. Co., Pontiac, Mich.
(See page 798.)

Kelkotters—See American Cotter Pin Co.

McWhorter Mfg. Co., Riverton, N. J.

Everything is listed under the NOUN or principal word

PINS, Cotter (Continued)

National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 Saco—See Smith & Co.
 Smith & Co., F. P., Sharon Hills, Pa. "Saco."
 W W—See Western Wire Products Co.
 Western Wire Products Co., 324-26 S. Third St., St. Louis, Mo. "W W."
 Whitaker Mfg. Co., Chicago, Ill. (See page 311.)
 Wire Goods Co., 28 Union St., Worcester, Mass.

PINS, Crank Ratchet for Fords

Al-Fontaine Co., Millbury, Mass.
 Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "Sta-Tite."
 American Auto Products Co., 1819 L St., N. W., Washington, D. C. "Jiffy."
 Jiffy—See American Auto Products Co.
 Sta-Tite—See Allied Steel Products Co.

PINS, DRIFT—See Punches, Center, Prick and Drift

PINS, Escutcheon

American Steel & Wire Co., Chicago, Ill.
 Atlas Tack Corp., Fairhaven, Mass.
 Blake & Johnson Co., Waterbury, Conn. (See page 737.)
 Corbin Screw Corp., 227 High St., New Britain, Conn.
 Hamill, John, Clay & Oakland Sts., Brooklyn, N. Y. (See page 723.)
 Star—See Turner & Seymour Mfg. Co.
 Stimpson Co., Edwin B., 70 Franklin Ave., Brooklyn, N. Y.
 Turner & Seymour Mfg. Co., Lawton St., & R. R., Torrington, Conn. "Star."
 Waterbury Mfg. Co., 238 Grand St., Waterbury, Conn.
 Wire Goods Co., 28 Union St., Worcester, Mass.

PINS, Piston

(See also Machine Work; also Screw Machine Products)

Allopar—See Alloy Parts Mfg. Co.
 Alloy Parts Mfg. Co., Canton, Mass. "Allopar."
 American Engine & Airplane Co., 2809 W. Pico St., Los Angeles, Cal. (See page 635.)
 Ashley Machine Works, 724 University Ave., Rochester, N. Y.
 Automotive Products Corp., Hazleton, Pa. (See page 627.)
 Avis Gun Barrel Co., New Haven, Conn. (See page 629.)
 B-N—See Burgess-Norton Mfg. Co.
 Bard Mfg. Co., Royersford, Pa. (See page 149.)
 Blettner Co., Geo. H., 1401-05 Jackson Blvd., Chicago, Ill.
 Bridgers Co., J. D., Florence, S. C. (See page 727.)
 Bu-Nite—See Butler Mfg. Co.
 Buffalo Cylinder Grinding Co., 889 Main St., Buffalo, N. Y.
 Burgess-Norton Mfg. Co., Dept. D., 532-44 Peyton St., Geneva, Ill. "B-N." (See page 627.)
 Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
 Cathcart, C. A., 161 Mass. Ave., Boston, Mass. (See page 925.)
 Central Machine Works, 19 Church St., Worcester, Mass.
 Cleveland Piston Pin & Bolt Co., Stuyvesant Bldg., Cleveland, O.
 Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.
 Conul Auto Parts Co., National City Bank Bldg., Cleveland, O. (Manufacturers' Agents.) (See page 509.)

Detroit Machine Tool Co., 6545 St. Antoine St., Detroit, Mich.
 Detroit Motor Parts Co., 133-35 W. Larned St., Detroit, Mich.
 Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
 Dyer Co., 155 Brookline Ave., Cambridge, Mass.
 Ellis Co., 1406 N. Michigan St., Elkhart, Ind.
 Fargo Motor Co., 1102-44 W. 22d St., Chicago, Ill. (See page 629.)
 Farran-Kinney Co., 7 S. Dearborn St., Chicago, Ill. (See page 113.)
 Foster-Johnson Co.—See Jonas C. N. & F. W.
 Fostoria Screw Co., E. Railroad St., Fostoria, O.
 Frostholm Bros., 221 Washington Sq., Syracuse, N. Y.
 Gale-Sawyer Co., 36 Oliver St., Boston, Mass.
 Gas Motor Parts Co., 53 Page St., San Francisco, Cal.
 General Carburetor Co., 1745 O St., Lincoln, Neb. "Staround."
 Gorman, O. D., 131 Ivy St., Atlanta, Ga.
 Green Engineering Co., Main St. & Burns Ave., Dayton, O.
 Hoffman Metals Corp., 15 Leonard St., New York, N. Y.
 Houpert Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 633.)
 Hyklas—See Parts Service Co.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sole Representatives for Foster-Johnson Co., Elkhart, Ind.) (See page 134.)
 Landis & Sons, A. B., (Chestnut Hill) Philadelphia, Pa.
 Lederer Bros. Co., 100 Stewart St., Providence, R. I. (See page 745.)
 Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind.
 Lincoln Machine Co., 1086 Main St., Pawtucket, R. I.
 Lyon Co., Edward F., 1600-24 E. Euclid Ave., Detroit, Mich.
 McDevall, E. S., 2510 Park Blvd., Detroit, Mich. (See page 639.)
 Machine Specialty Co., 15 Main St., Ann Arbor, Mich.
 Marquette Metal Products Co., 6545 Carnegie Ave., Cleveland, O.
 Millholland Machine Co., 1102 W. 23rd St., Indianapolis, Ind.
 Monmouth Machine Co., 2343 Lakeside Ave., Cleveland, O.
 National Automotive Products Corp., 850 Lafayette Blvd., Detroit, Mich.
 National Steel Products Co., 2270 Franklin St., Detroit, Mich.
 Neupert Mfg. Co., 82 Lark St., Buffalo, N. Y.
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Nilson-Miller Co., 50-13th St., Hoboken, N. J. (See page 719.)
 Noonan Mfg. Co., D. R., 219-21 W. Court St., Paris, Ill.
 Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 613.)
 Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 149.)
 Peninsular Products Co., Detroit, Mich. (See page 629.)
 Phoenix Mfg. Co., Grand River at Loraine, Detroit, Mich. (See page 725.)
 Recording Devices Co., 584 W. Fifth St., Dayton, O.
 Rebco—See Reus Bros. Co.
 Reus Bros. Co., 150 W. Mt. Royal Ave., Baltimore, Md. "Rebco."
 Schnerr Co., J. J., 799 Golden Gate Ave., San Francisco, Cal. (See page 429.)
 Sellk Bros., 2532 24th St., Detroit, Mich. (See page 627.)

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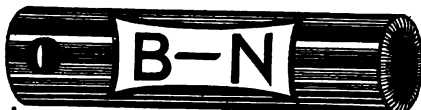
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717 Ellis Street,
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New York City.

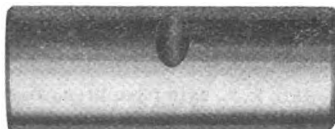
Deveney & Story,
923 Hurt Bldg.,
Atlanta, Ga.
Franklin T. Berry,
1304 Penn. Bldg.,
Philadelphia, Pa.
H. Franklin Lilley,
312 Interstate Bldg.
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Sherman-Klove Co., 4640-48 W. Harrison St., Chicago, Ill. (See page 743.)
 Singer Machine Works, Joe, 2116 S. Los Angeles St., Los Angeles, Cal. (See page 627.)
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Standard Gear Co., 5930 Commonwealth Ave., Detroit, Mich.
 Staround—See General Carburetor Co.
 Steel Products Co., Cleveland, O. (See page 915.)
 Taylor Mfg. Co., 10 Portland St., Cambridge, Mass. "Taylor Tite."
 Taylor Tite—See Taylor Mfg. Co.
 Trindl Co., Wabash Ave. and 29th St., Chicago, Ill. (See page 637.)
 Turner Machine & Mfg. Co., 31st & Genesee Sts., Kansas City, Mo.
 U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 639.)
 Universal Auto Parts Co., 268 Nartilla St., Portland, Ore. (Distributors.) (See page 157.)
 Universal Grinding Co., Hartford, Conn.
 Vulcan Products Co., 850 Lafayette Blvd., Detroit, Mich.
 Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.
 Wainwright Engineering Corp., Commersville, Ind. (See page 632.)
 Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 321.)
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)
 Wilcox Motor Parts & Mfg. Co., Saginaw, Mich. (See page 917.)
 Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 633.)

PINS, Piston, for Fords

(Including both regular and special light weight pins)

Acme Mfg. Co., Boonton, N. J.
 B-N—See Burgess-Norton Mfg. Co.
 Bemiller Foundry & Machine Co.—See Eckhouse & Co.
 Burgess-Norton Mfg. Co., Dept. D., 532-44 Peyton St., Geneva, Ill. "B-N." (See page 627.)
 Bu-Nite—See Butler Mfg. Co.
 Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
 Cincinnati Screw Co., Twightwee, O. (See page 735.)
 Detroit Machine Tool Co., 6443 St. Antoine St., Detroit, Mich.
 Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Dept. for Bemiller Foundry & Machine Co., Bellville, O. (See page opposite Title Page.)
 Ellis Co., 1406 N. Michigan St., Elkhart, Ind.
 Fostoria Screw Co., E. Railroad St., Fostoria, O.
 Frostholt Bros., 221 Washington Sq., Syracuse, N. Y.
 Gale-Sawyer Co., 36 Oliver St., Boston, Mass.
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.
 Hoffman Metals Corp., 15 Leonard St., New York, N. Y.
 McDowell, E. S., 2510 Park Blvd., Detroit, Mich. (See page 639.)
 Motor City Parts Co., 908 Philadelphia St. W., Detroit, Mich.

Newark Motor Products Mfg. Co., 245 N. J. R. R., Newark, N. J.
 Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 613.)
 Schnerr Co., J. J., 790 Golden Gate Ave., San Francisco, Cal. (See page 429.)
 Selik Bros., 2532 24th St., Detroit, Mich. (See page 627.)
 Reboco—See Reus Bros. Co.
 Reus Bros. Co., 150 W. Mt. Royal Ave., Baltimore, Md. "Reboco."
 Wilcox Motor Parts & Mfg. Co., Saginaw, Mich. (See page 917.)

PINS, Taper

Belviders Screw & Machine Co., E. Madison St., Belvidere, Ill.
 Cassidy-Fairbanks Mfg. Co., 6136 S. La Salle St., Chicago, Ill.
 Chicago Nut Co., 2513-39 W. 20th St., Chicago, Ill.
 Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 499 and 743.)
 Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
 Ferry Cap & Set Screw Co., Cleveland, O. (See page 743.)
 Hartford Machine Screw Co., Hartford, Conn. (See page 741.)
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 National Sewing Machine Co., Belvidere, Ill.
 Peninsular Products Co., Detroit, Mich. (See page 629.)
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
 St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
 Screw Machine Products Corp., 1013 Eddy St., Providence, R. I.
 Standard Tool Co., 8900-34 Central Ave., Cleveland, O.
 U. S. Automatic Co., Amherst, O.
 Western Automatic Machine Screw Co., Elyria, O.
 Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

PINS, Valve Stem, for Fords

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

PIPE, BRASS—See Tubing, Brass and Copper

PIPE FITTINGS—See Fittings, Pipe

PIPE VISES—See Vises, Pipe

PIPE WRENCHES—See Wrenches, Pipe

PIPES, BREATHER, FOR FORDS—See Breathers, Crank Case

PIPING, EXHAUST AND INTAKE—See Manifolds, Exhaust

PISTON ALIGNING JIGS—See Jigs, Piston Aligning

PISTON BUSHING REAMERS FOR FORDS—See Reamers, Piston Bushing

PISTON CLAMPS—See Vises, Piston, for Fords

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PISTON PIN BUSHINGS FOR FORDS—See Bushings, Bronze

PISTON PINS—See Pins, Piston

PISTON RING COMPRESSING TOOLS—See Tools, Piston Ring

PISTON RING EXPANDING RINGS—See Rings, Piston Ring Expanding

PISTON RING EXPANDING SPRINGS—See Rings, Piston Ring Expanding

PISTON RING GRINDERS—See Grinders, Piston Ring

PISTON RING GROOVE CLEANING TOOLS—See Tools, Piston Ring Groove Cleaning

PISTON RING TOOLS—See Tools, Piston Ring

PISTON RINGS—See Rings, Piston

PISTON SQUARES—See Jigs, Piston Aligning

PISTON VISES FOR FORDS—See Vises, Piston

PISTONS, Finished and Machined

(For Piston Castings—See Castings)

Alloys Motor Parts Mfg. Co., 315-15 Puyallup Ave., Tacoma, Wash. "Tsungani."

Aluminite—See Green Engineering Co.

Aluminum Manufacturers, Inc., 6205 Carnegie Ave., Cleveland, O. "Lynite."

American Engine & Airplane Co., 2869 W. Pico St., Los Angeles, Cal. "Rite-Wate." (See page 635.)

American Piston Co., Bowling Green, O. "Tapco."

American Piston & Machine Co., 1834-40 Garfield Ave., Detroit, Mich. (See page 633.)

Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.

Atlas Machine Works, 1516 S. Grand Ave., Los Angeles, Cal.

Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.

Automotive Products Corp., Hasleton, Pa. (See page 627.)

Blettner Co., Geo. H., 1401-05 Jackson Blvd., Chicago, Ill.

Borland, J. Archie, Huntington, Ind.

Bridgeport Piston Ring Co., Connecticut Ave. & Third St., Bridgeport, Conn.

Bu-Nite—See Butler Mfg. Co.

Buffalo Cylinder Grinding Co., 889 Main St., Buffalo, N. Y.

Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."

Catheart, C. A., 161 Mass. Ave., Boston, Mass. (See page 625.)

Clark-Turner Piston Co., Inc., Los Angeles, Cal. "De Luxe." (See page 631.)

Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.

Cochran Piston Corp., Moffatt Bldg., Detroit, Mich.

Dalco—See Dall Motor Parts Co.

Dall Motor Parts Co., 500 South St., Vermillion, O. "Dalco." (See page 637.)

De Luxe—See Clark-Turner Piston Co.

De Luxe Specialty Co., 176 Brookline Ave., Boston, Mass. (Maine, New Hampshire, Vermont, Massachusetts and Rhode Island Distributors for De Luxe Pistons.) (See page 729.)

Detroit Auto Piston Co., 1137 Baltimore Ave. W., Detroit, Mich. (See page 633.)

Detroit Foundry Co., 2642 E. Grand Blvd., Detroit, Mich.

Downmetal Division The Dow Chemical Co., Midland, Mich. (See page 637.)

Dyer Co., 155 Brookline St., Cambridge, Mass.

Ellis Co., 1406 N. Michigan St., Elkhart, Ind. E. C. L.—See Long, E. C.

Fargo Motor Co., 1162-64 W. 22nd St., Chicago, Ill. (See page 629.)

Farran-Kinney Co., 7 S. Dearborn St., Chicago, Ill. (See page 113.)

Ferro Machine & Foundry Co., 47 Hubbard Ave., Cleveland, O.

Ferrolite—See Perfection Auto Parts Co.

General Carburetor Co., 1745 O St., Lincoln, Neb. "Staround."

Gorman, O. D., 131 Ivy St., Atlanta, Ga.

Green Engineering Co., Main St. & Burns Ave., Dayton, O. "Aluminite."

Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.

Houper Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 633.)

Ideal Bronze Co., 1265-69 E. 55th St., Cleveland, O. "Vita-Lite." (See page 201.)

Jahns, W. H., 3663 Lacy St., Los Angeles, Cal.

Kant-Skore Piston Co., 2958 Spring Grove Ave., Cincinnati, O.

Keuka Industries, Inc., Hammondsport, N. Y. "Kilkorps."

Kilkorps—See Keuka Industries, Inc.

Lammert & Mann Co., 215-21 N. Wood St., Chicago, Ill.

Lauchlin-Loehr Lubricating Piston Co., 220 Cedar St., Green Bay, Wis.

Levett Co., Walker M., 417-21 E. 23rd St., New York, N. Y. "Magnalite."

Long, E. C., 4834 Beaubien St., Detroit, Mich. "E. C. L."

Lynite—See Aluminum Manufacturers, Inc.

McCadden Machine Works, 502-12 Fourth St. N., St. Cloud, Minn.

McDowall, E. S., 2510 Park Blvd., Detroit, Mich. (See page 639.)

Magnalite—See Levett Co.

Marco—See Marvel Machinery Co.

Marvel Machinery Co., Minneapolis, Minn. "Marco."

Milwaukee Cylinder Grinding Co., Wiel & Concordia Aves., Milwaukee, Wis.

Modern Electric & Machine Co., 336-40 Fort Wayne Ave., Indianapolis, Ind. "R. & M. Malmum."

Nilson-Miller Co., 50-13th St., Hoboken, N. J. (See page 719.)

Noonan Mfg. Co., D. R., 219-21 W. Court St., Paris, Ill.

Ohio Reamer Co., 5337 St. Clair Ave., Cleveland, O. (See page 632.)

Perfection Auto Parts Co., 410 Lakeside Ave., N. W., Cleveland, O. "Ferrolite."

Precision Auto Parts Co., 344 W. 49th St., New York, N. Y.

R. S. P.—See Rich Steel Products Co.

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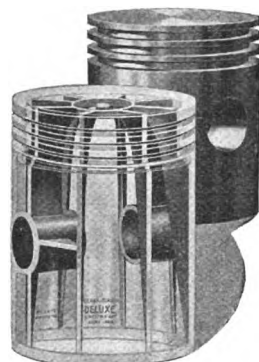
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Automobile Piston Co., 1104 Union Ave., Memphis, Tenn.		DeLuxe Specialty Co., 178 Brookline Ave., Boston		SOUTH DAKOTA	
CALIFORNIA		MICHIGAN		DeLuxe Piston Co., 225 West 8th St., Sioux Falls	
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Bakersfield Garage & Auto Parts Co., Bakersfield		MINNESOTA		Automobile Piston Co., 1104 Union Ave., Memphis	
Hanford Garage, 116 W. 8th St., Hanford		Burd High Compression Ring Sales Co., 10 S. 9th St., Minneapolis		TEXAS	
Hansen Machine Co., Washington at 8th, Eureka		Motor Equipment Co., 518 Providence Bldg., Duluth		Beatty-Polsom Auto Co., McAllen	
Hartman's Machine Works, Red Bluff		MISSISSIPPI		Fritz Reuter, 111 Cameron St., San Antonio, Texas	
Boemer, Boemer & Silva, Santa Maria		Fi-Ro Garage, 203 Pearl St., Natchez		Lawrence Process Co., 3001 Commercial St., Dallas	
A. H. Sifton, N. Spadra St., Fullerton		MISSOURI		Simmonds Motor & Machine Co., 345 Pine St., Beaumont	
South End Machine Co., 602 S. Main St., Porterville		Kansas City Motor Parts Co., 1508 McGee St., Kansas City		Smith Machine Co., 311 S. Kansas St., El Paso	
Sulprizio Machine Works, 507 Broadway, Fresno		Piston Service Co., 3441 Juniata St., St. Louis, Mo.		United Motor Co., 612 Louisiana St., Houston	
Waterson Bros., Inc., Bishop		MONTANA		VIRGINIA	
L. S. Weeks, Co., Miner Ave. and Sutter St., Stockton		Franklin Garage, 201 N. 30th St., Billings		Stebbing & Paul Corp., 1 West Marshal St., Richmond	
COLORADO		Riverside Machine Works, 901 Tenth Ave., N., Great Falls		WASHINGTON	
Z. T. Spriggs, 1942 Arapahoe St., Denver		DeLuxe Piston Co., Inc., 2010 Far-num St., Omaha. Also: 6th & Ella Sts., Beatrice		Geo. B. Burbank, Inc., 116 Wen-atatche Ave., S., Wenatche	
CONNECTICUT		NEW JERSEY		Denard Auto Machine Works, 2328 South "E" St., Tacoma	
New Haven Machine Co., 157 Orange Ave., Allington Dist., New Haven		Westervelt Machine Corp., 921 8th Ave., New York City		Jack Nalder Machine Shop, 4th and Elm Sts., Walla Walla	
DELAWARE		NEW MEXICO		Robinson Gear & Machine Works, 4th Ave. at Blanchard, Seattle	
Westervelt Mach. Corp., 921 8th Ave., New York City		B. L. Dodson & Son, 400 N. 4th St., Albuquerque		Sunset Auto Sales Co., 405 Main St., Ellensburg	
DISTRICT OF COLUMBIA		NEW YORK		United Parts Service Co., 109 S. 2nd St., Yakima, Wash.	
Westervelt Mach. Corp., 921 8th Ave., New York City		L. Lawrence & Co., 846 Main St., Buffalo		Washington Mach. & Supply Co., Spokane	
Marine Ways Machine Co., St. Petersburg		Westervelt Machine Corp., 921 8th Ave., New York City. Also Lawrence, Nassau Co.		WEST VIRGINIA	
FLORIDA		NORTH CAROLINA		The Howe Company, 2152 Main St., Wheeling	
C. Martin Steele, 905 Florida Ave., Tampa		P. B. Comer, 111 Lewis St., Greens-boro		Huntington Auto Supply Co., 938 Third Ave., Huntington	
GEORGIA		OHIO		FOREIGN COUNTRIES	
Story Auto Equipment & Supply Co., 91 S. Pryor St., Atlanta		L. Lawrence & Co., 6529 Euclid Ave., Cleveland		AUSTRALIA	
HAWAII		Litters Motor Machine Shop, 240 N. 4th St., Columbus		Harkness-Hillier, Ltd., Bridge St., Drummoyne, Sydney, N. S. W.	
The Pond Co., Ltd., Honolulu, T. H.		Hayley Sales Co., 634 Jefferson Ave., Toledo		Bowman Brothers, Ltd., Regina and Naskatoon, Sask.	
IDAHO		OKLAHOMA		Precision Mach. Co., 319 Sixth Ave., East, Calgary, Alta.	
E. J. Stephen Cylinder Grinding Co., Twin Falls		Hearn Cylinder Grinding Co., 302 East First St., Tulsa		Standard Machine Works, 660 St. Matthews Ave., Winnipeg, Man.	
ILLINOIS		OREGON		ENGLAND	
Bentley & Diehl Bros., 114 S. Van Buren St., Freeport		Modern Mechanical Sanitorium, 101 Fifth Ave., West Eugene		Laystall Motor Engineering Works, Ltd., 34 Queen St., London, E. C. 4	
J. B. Koon, 1800 Indiana Ave., Chicago		Burns Machine Works, Inc., Cotton-wood & Water Sts., Pendleton		Messrs. Mohler & DeGress Sues, S. A. Ave., Morelos No. 16, Mexico D. F.	
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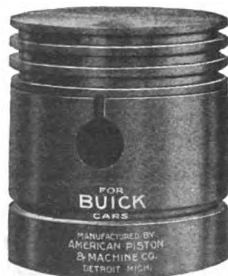
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 Rich Steel Products Co., Springfield Pl., Battle Creek, Mich. "R. S. P."
 Ringless Piston Replacement Corp., 103 Park Ave., New York, N. Y.
 (See page 235.)
 Ritefit—See Wright Mfg. Co.
 Rite-Wate—See American Engine & Airplane Co.
 Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Verv-Lite."
 Schnerr Co., J. J., 799 Golden Gate Ave., San Francisco, Cal. (See page 429.)
 Selik Bros., 2532, 14th St., Detroit, Mich. (See page 627.)
 Seymour Laboratoried Units, 3009 Lisbon Ave., Milwaukee, Wis.
 Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.
 Spencer-Smith Machine Co., Howell, Mich. (See page 632.)
 Staround—See General Carburetor Co.
 Storm Mfg. Co., Minneapolis, Minn.
 Tapco—See American Piston Co.
 Taylor Mfg. Co., 10 Portland St., Cambridge, Mass. "Taylor Tite."
 Taylor Tite—See Taylor Mfg. Co.
 Trindl Co., Wabash Ave. and 29th St., Chicago, Ill. (See page 637.)
 Tsungani—See Alloys Motor Parts Mfg. Co.
 U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 639.)
 Verv-Lite—See Wilkie's Machine Works.
 Verv-Lite—See Saginaw Metal Parts Corp.
 Vita-Lite—See Ideal Bronze Co.
 Wadell Motor Corp., 661-71 Freylinhuysen Ave., Newark, N. J.
 Wainwright Engineering Corp., Connerville, Ind. (See page 632.)
 Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 321.)
 Weems, M. K., Maine & 11th Sts., Quincy, Ill.
 Westervelt Machine Corp., Lawrence, N. Y. (Delaware, District of Columbia, New Jersey and Greater New York Distributors for De Luxe Pistons.) (See page 632.)
 Whitman Luvium Metal Mfg. Co., 6900 S. Broadway St. Louis Mo.
 Wilkie's Machine Works, 208 W. Third St., Winona, Minn. "Verv-Lite."
 Willis Piston Co., 676 W. Grand Blvd., Detroit, Mich. (See page 609.)
 Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 633.)
 Wridkway Co., Hallstead, Pa. "Zephyr."
 Wright Mfg. Co., 11 Second St., S. E., Minneapolis, Minn. "Ritefit."
 Zephyr—See Wridkway Co.
- Brodrig Bros., 59 Congress St., Hartford, Conn.
 Bu-Nite—See Butler Mfg. Co.
 Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
 Clark-Turner Piston Co., Inc., Los Angeles, Cal. "De Luxe." (See page 631.)
 Cochran Piston Corp., Moffatt Bldg., Detroit, Mich.
 Craig-Hunt—See Speedway Engineering Co.
 Dalco—See Dall Motor Parts Co.
 Dall Motor Parts Co., 500 South St., Vermillion, O. "Dalco." (See page 637.)
 De Luxe—See Clark-Turner Piston Co.
 De Luxe Specialty Co., 170 Brookline Ave., Boston, Mass. (Maine, New Hampshire, Vermont, Massachusetts and Rhode Island Distributors for De Luxe Pistons.) (See page 729.)
 Depuy Bros., Canterbury N. H.
 Doane Machine Co., Waltham, Mass.
 Dowmetal Division The Dow Chemical Co., Midland, Mich. (See page 637.)
 Dyer Co., 155 Brookline St., Cambridge, Mass.
 E. C. L.—See Long, E. C.
 Eckhouse & Co., Walter, 616-23 S. Michigan Blvd., Chicago, Ill. (Sales Dept. for Remiller Foundry & Machine Co., Bellville, O.)
 (See page opposite Title Page.)
 Ellis Co., 1406 N. Michigan St., Elkhart, Ind.
 Farran-Kinney Co., 7 S. Dearborn St., Chicago, Ill. (See page 113.)
 Hall-Scott Motor Car Co., Berkeley, Cal. "Johnson."
 Johnson—See Hall-Scott Motor Car Co.
 K-F—See Keys Piston Ring Co.
 Kant-Skore Piston Co., 2958 Spring Grove Ave., Cincinnati, O.
 Keuka Industries, Inc., Hammondsport, N. Y. "Kikorps."
 Kikorps—See Keuka Industries, Inc.
 Keys Piston Ring Co., 3020 Olive St., St. Louis, Mo. "K-P." (See page 719.)
 Lauchlin-Loehr Lubricating Piston Co., 220 Cedar St., Green Bay, Wis.
 Levett Co., Walker M., 417-21 E. 23d St., New York, N. Y.
 Litewate—See Western Pump Co.
 Long, E. C., 4834 Beaubien St., Detroit, Mich. "E. C. L."
 M & P Co., Saranac Lake, N. Y.
 McCadden Machine Works, 502-12 Fourth St., N. St. Cloud, Minn.
 McDowall, E. S., 2510 Park Blvd., Detroit, Mich. (See page 630.)
 Magnelitte—See Sunderland Machine Shops.
 Marco—See Marvel Machinery Co.
 Marvel Machinery Co., Minneapolis, Minn. "Marco."
 Modern Electric & Machine Co., 936-40 Fort Wayne Ave., Indianapolis, Ind. "R & M Malumium."
 Noonan Mfg. Co., D. R., 219-21 W. Court St., Paris, Ill.
 Ohio Renner Co., 5337 St. Clair Ave., Cleveland, O. (See page 632.)
 R & M Malumium—See Modern Electric & Machine Co.
 Rebco—See Reus Bros. Co.
 Reus Bros. Co., 150 W. Mt. Royal Ave., Baltimore, Md. "Rebco."
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 (See page 235.)
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 Seymour Laboratoried Units, 3009 Lisbon Ave., Milwaukee, Wis.

PISTONS, Special Light Weight, for Fords

(Including aluminum and aluminum alloy pistons)

- Am-pe-Co—See American Machine Products Co.
 American Engine & Airplane Co., 2809 W. Pico St., Los Angeles, Cal. "Rite-Wate." (See page 635.)
 American Machine Products Co., Marshalltown, Iowa "Am-pe-Co."
 American Piston & Machine Co., 1834-40 Garfield Ave., Detroit, Mich. (See page 633.)
 Atlas Machine Works, 1516 S. Grand Ave., Los Angeles, Cal.
 Automotive Products Corp., Hasleton, Pa. (See page 627.)
 Bemiller Foundry & Machine Co.—See Eckhouse & Co.
 Borland, J. Archie, Huntington, Ind.

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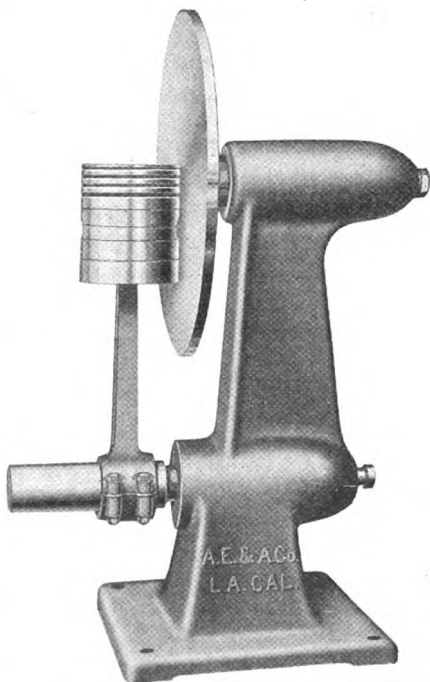
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Spencer-Smith Machine Co., Howell, Mich. (See page 632.)

Sunderland Machine Shops, Omaha, Neb. "Magnalite." (See page 321.)

Very-lite—See Saginaw Metal Parts Corp.

Western Pump Co., 428 Third St., Davenport, Ia. "Litewate."

Westervelt Machine Corp., Lawrence N. Y. (Delaware, District of Columbia, New Jersey and Greater New York Distributors for De Luxe Pistons.) (See page 632.)

Whitman Luvium Metal Mfg. Co., 6900 S. Broadway, St. Louis, Mo.

Willis Piston Co., 676 W. Grand Blvd., Detroit, Mich. (See page 609.)

Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 633.)

Wridgway Co., Hallstead, Pa. "Zephyr."

Zephyr—See Wridgway Co.

PLANER CHUCKS—See Chucks, Planer

PLANER TOOL HOLDERS—See Holders, Lathe and Planer Tool

PLANER TOOLS—See Tools, Lathe and Planer

PLANERS, Metal

American Tool Works Co., Pearl & Eggleston Aves., Cincinnati, O.

Betts Machine Co., Rochester, N. Y.

Cincinnati Shaper Co., Elam St. & Garrard Ave., Cincinnati, O.

Cleveland Planer Co., 3148 Superior Ave., N. E., Cleveland, O.

Conradson Machine Tool Co.—See Ryerson & Son.

Gray Co., G. A., Gest & Depot Sts., Cincinnati, O.

Hamilton Machine Tool Co., Hamilton, O.

Morley Machinery Corp., 215-17 N. Water St., Rochester, N. Y. "Wilson."

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y. "Pond."

Ohio Machine Tool Co., Kenton, O.

Pond—See Niles-Bement-Pond Co.

Powell Machine Co., 243 Stafford St., Worcester, Mass.

Putnam Machine Co., Newton Pl., Fitchburg, Mass.

Rockford Machine Tool Co., 2400 Kiswaukee St., Rockford, Ill.

Ryerson & Son, Joseph T., 2558 W. 16th St., Chicago, Ill. (Sole Distributors for Conradson Machine Tool Co., Green Bay, Wis.)

Stapf & Co., John B., Dunkirk, N. Y.

Whitcomb-Blaisdell Machine Tool Co., 53 Franklin St., Boston, Mass.

Wilson—See Morley Machinery Corp.

Woodward & Powell Planer Co., Webster St. & B. & A. R. R., Worcester, Mass.

PLANERS, Wood

American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.

Bentel & Margedant Co., Hamilton, O.

Connell & Dengler Machine Co., Allen & Platt Sts., Rochester, N. Y.

Cordesman, Meyer & Co., 53-57 Center Ave., Cincinnati, O.

Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.

Crescent Machine Co., Leetonia, O.

Defiance Machine Works, 484 Perry St., Defiance, O.

Fay & Egan Co., J. A., Cincinnati, O.

Hall & Brown Woodworking Machine Co., Broadway & Ninth St., St. Louis, Mo.

Hermance Machine Co., 178 Campbell St., Williamsport, Pa.

Kane & Roach, Niagara & Shonnard Sts., Syracuse, N. Y.

Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.

Porter Machinery Co., C. O., 606-08 Front Ave., N. W., Grand Rapids, Mich.

Power & Co., L., 20 S. 23rd St., Philadelphia, Pa.

Prybitt Machine Co., P., 512-24 W. 41st St., New York, N. Y.

Schneider & Goosman Machine Co., Cincinnati, Ohio.

Smith Machine Co., H. B., Smithville, N. J.

Towsley Mfg. Co., John T., Gest & Evans Sts., Cincinnati, O.

Wallace & Co., J. D., 1401-05 W. Jackson Blvd., Chicago, Ill.

Whitney & Son, Baxter D., Winchendon, Mass.

Yates Machine Co., P. B., Beloit, Wis.

PLANETARY GEARS—See Gears, Transmission

PLANS, Dealer Merchandising

Munn Co., John O., Bank of Commerce Bldg., Toledo, O. (See page 641.)

PLANTS, Farm Lighting

A-C Electrical Mfg. Co., U. B. Bldg., Dayton, Ohio.

Alamo Farm Light Co., Tower Bldg., Chicago, Ill.

American Farm Equipment Co., Williamsport, Pa.

Bishop & Son Co., A. L., 1225 Front St., Fargo, N. Dak. "Gate City Lite."

Carlton, Young & Catlin, Grand Central Palace, New York, N. Y. "C-Y-C."

C-Y-C—See Carlton, Young & Catlin.

D-Light—See Dodge, H. C.

Delco—See Domestic Engineering Co.

Dodge, H. C., 32-46 Olger St., Boston, Mass. "D-Light."

Domestic Engineering Co., Dayton, O. "Delco."

Electric Auto-Lite Corp., Toledo, O. "Willys."

Everlite Co., 310 Tenth Ave., S., Minneapolis, Minn.

Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill.

Gate City Lite—See Bishop & Son Co.

Genco—See General Gas Electric Co.

General Gas Electric Co., Seventh & Middle Sts., Hanover, Pa. "Genco."

Globe Electric Co., 10 Keefe Ave., Milwaukee, Wis.

Hanover Utilities Co., World Bldg., New York, N. Y. "Sun-Lite."

Holt Farm Light Co., Ludington, Mich.

Hoosier Farm Light Co., 1713 First Ave., Evansville, Ind. "Hoosierlite."

Hoosierlite—See Hoosier Farm Light Co.

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Jupiter—See Perfection Storage Battery Co.

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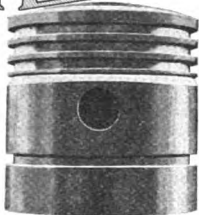
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 Lalley Light Corp., 3171 Bellevue Ave., Detroit, Mich.
 Langstadt-Meyer Co., 767 College Ave., Appleton, Wis.
 Lauson-Lawton Co., 530 Brown St., De Pere, Wis.
 Lincoln Light Corp., Grafton, Wis.
 Linderman Steel & Machine Co., Dayton, O.
 Litscher Lite Corp., 1140 Monroe Ave., Grand Rapids, Mich.
 Main Electric Co., Cleveland, O.
 Marco Light & Power Corp., 2480 Michigan Ave., Chicago, Ill.
 Mathews Co., Port Clinton, O. "Ker-O-El."
 Mathews Engineering Co., 400 Monroe St., Sandusky, O. (See page 365.)
 Mayhew Co., Milwaukee, Wis.
 Merritt Co., S. Whyte, 516 Fifth Ave., New York, N. Y.
 Multiple Storage Battery Co., Van Wyck Ave. & L. I. R. R., Jamaica, N. Y.
 National Electric Lighting Co., Wilton Junction, Iowa.
 Ohio Electric Works, 6304-06 Ellen Ave., N. W., Cleveland, O.
 Perfection Storage Battery Co., 500 E. 40th St., Chicago, Ill. "Jupiter."
 Petroleum Engine & Mfg. Co., 120 Broadway, New York, N. Y.
 Phelps Light & Power Co., Rock Island, Ill.
 Radiant Mfg. Co., Ferry & Water Sts., Sandusky, O.
 Recco—See Rural Electric Equipment Co.
 Regal Gasoline Engine Co., 59 W. Pearl St., Coldwater, Mich. "Regalite."
 Regalite—See Regal Gasoline Engine Co.
 Rural Electric Equipment Co., Canton, Pa. "Recco."
 Stearns Motor Mfg. Co., Ludington, Mich.
 Sturtevant Co., B. F., Hyde Park, Boston, Mass.
 Suburban Lighting Co., Toledo, O.
 Sun-Lite—See Hanover Utilities Co.
 Sunbeam Electric Mfg. Co., Evansville, Ind.
 Superior Engineering Co., 332 Third Ave., Pittsburgh, Pa.
 Swanlite Co., 300 Tenth Ave., S., Minneapolis, Minn.
 Universal Products Co., Oshkosh, Wis.
 Warnerlite Products Corp., Davenport, Iowa.
 Willys—See Electric Auto-Lite Corp.
 Worthington Pump & Machinery Corp., 106 Houthoff Pl., Cudahy, Wis.

PLATE GLASS—See Glass, Polished Plate

PLATES, Demountable Rim Wedge

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American Auto Products Co., 1819 L St., N. W., Washington, D. C.
 Hykon Mfg. Co., 153 E. State St., Alliance, O.
 Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.

PLATES, Differential Assembly, for Fords

Hinckley-Myers Co., Water St., Jackson, Mich.

PLATES, HEEL AND PEDAL

Allen—See Cushion Petal Co.
 Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
 Cushion Pedal Co., 287 San Fernando Road, Los Angeles, Cal. "Allen."
 (See page 441.)
 General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.
 Hipco Mfg. Co., 34 Columbus Ave., Boston, Mass.
 Lexington Motor Sales Co., Indianapolis, Ind.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Spiro Mfg. Co., C. 68-72 E. 131st St., New York, N. Y. "Uniq."
 Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill.
 Sterling—See Republic Auto Parts Co.
 Sure-Step Auto Mat Co., 12-14 Canal St., Boston, Mass.
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass.
 Uniq—See Spiro Mfg. Co.

PLATES, Name

Abbott, W. H., 46 Greenwich Ave., New York, N. Y.
 Aeme Etched Products Co., 459 Brady St., Detroit, Mich. (See page 641.)
 American Name Plate Co., 363 Atlantic Ave., Boston, Mass.
 Balzer Co., Gus, New York American Bldg., New York, N. Y.
 Bastian Bros. Co., 68 Mt. Hope Ave., Rochester, N. Y.
 Blackington & Co., V. H., 140 Commonwealth Ave., Attleboro Falls, Mass.
 Bernard Co., J., 422-30 E. 53d St., New York, N. Y.
 Chandler Co., Napier St., Springfield, Mass.
 Childs & Co., S. D., 136 S. Clark St., Chicago, Ill.
 Chippewa Bronze Co., 1469 E. 118th St., Cleveland, O.
 Colgan Co., J. W., 4 Alden Ct., Boston, Mass.
 Crowe Name Plate & Engraving Co., 1749 Grace St., Chicago, Ill.
 Detroit Name Plate Etching Co., 684-90 E. Congress St., Detroit, Mich.
 (See page 639.)
 Electro-Chemical Engraving Co., 440-50 19th St., Brooklyn, N. Y.
 Etched Products Corp., 90-96 Tenth St., Long Island City, N. Y.
 Etching Company of America, 1520 Montana St., Chicago, Ill.
 Federal Name Plate & Novelty Co., 731 Federal St., Chicago, Ill.
 Fogarty Mfg. Co., 1121 E. Second St., Dayton, O.
 Fox Co., Gustave, 411-13 Race St., Cincinnati, O.
 General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.
 Grammes & Sons, L. F., 344 Union St., Allentown, Pa.
 Greenduck Co., Van Buren & Hoyne Aves., Chicago, Ill.
 Hanson Co., C. H., 178 N. Clark St., Chicago, Ill.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Matthews & Co., Jas. H., 185 Forbes Field, Pittsburgh, Pa.
 Metallograph Corp., Grand Central Terminal, New York, N. Y.
 Mayer Co. Geo. J., 36 S. Meridian St., Indianapolis, Ind.

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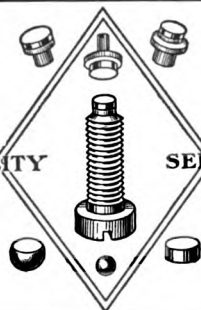
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PLATES, Name (Continued)

Murdock Co., W. James, 116 Opera Pl., Cincinnati, O.
 National Gauge & Equipment Co., La Crosse, Wis. (See page 401.)
 Nass, Jr., Geo. M., 61 Fulton St., New York, N. Y.
 New York Stencil Works, 100 Nassau St., New York, N. Y.
 Niagara Metal Stamping Corp., 235-47 Tenth St., Niagara Falls, N. Y. "Premax."
 O'Connor, James, Nevada Bldg., Cincinnati, O.
 Palm, Fechteler & Co., 67 Fifth Ave., New York, N. Y.
 Pannier Bros. Stamp Co., 207-09 Sandusky St., Pittsburgh, Pa. (See page 813.)
 Pittsburgh Stamp Co., 314 Penn Ave., Pittsburgh, Pa.
 Premax—See Niagara Metal Stamping Corp.
 Premier Metal Etching Co., 14th St. & Van Alst Ave., Long Island City, N. Y.
 Schwerdtle Stamp Co., 45 Cannon St., Bridgeport, Conn.
 Shank Sign Co., E. A., 19 Park Row, New York, N. Y.
 Shepard Art Metal Co., Detroit, Mich. (See page 451.)
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Stafford Co., N., 87 Fulton St., New York, N. Y.
 Torrey Roller Bushing Works, Bath, Me.
 Turner Brass Works, Sycamore, Ill.
 Tyler Mfg. Co., 755 Boylston St., Boston, Mass.
 Walter & Sons, N. C., 3 Park Row, New York, N. Y.
 Whiteford & Co., Jos. G., 185 N. Jefferson St., Chicago, Ill.
 Whitehead & Hoag Co., 272 Sussex Ave., Newark, N. J.
 Youell Co., E. V., rear 106 Pleasant Ave., Malden, Mass.

PLATES, PEDAL—See Plates, Heel

PLATES, SCREW—See Taps and Dies

PLATES, Step

(Metal plate to fasten to running board in place of mat; for Running Board Mats—See Mats, Running Board)

Hawthorne Lamp Works, 1410 Michigan Ave., Chicago, Ill.
 Holtum Mfg. Co., Freeport, Ill. (See page 903.)
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Maurer, W. J., 211 E. Stephenson St., Freeport, Ill. (See page 187.)

* **PLATES, STORAGE BATTERY REPAIR**—See Parts, Storage Battery Repair

PLATING, Brass and Nickel

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
 Ajax Plating & Specialty Mfg. Co., 1400 Niagara St., Buffalo, N. Y.
 Auto Plating Specialty Co., 23 Cambria St., Boston, Mass.
 Bernard Co., J., 423-30 E. 53d St., New York, N. Y.
 Boesch Lamp Co., 1135 Mission St., San Francisco, Cal.
 Boston Nickel Plating Co., 160 Portland St., Boston, Mass.

Brown Mfg. Co., W. G., Kingston, N. Y.
 Cheney & Son, S., Manlius, N. Y.
 Creutz Plating Co., Third & Vine Sts., Cincinnati, O.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Exeter Brass Works, 10 R. R. Ave., Exeter, N. H.
 Fitchburg Plating Works, rear 20 Main St., Fitchburg, Mass.
 Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich.
 Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.
 Iles Mfg. Co., E. W., Shelton, Conn.
 Johnson Bronze Co., New Castle, Pa. (See page 174.)
 Keuka Industries, Inc., Hammondsport, N. Y.
 Keyless Lock Co., Indianapolis, Ind.
 Limerick Co., J. Arthur, 960 N. Howard St., Baltimore, Md.
 Lionel Corp., 605-21 S. 21st St., Irvington, N. J.
 Lynam Electrical & Plating Co., Wm., Dakota & Kilmer Sts., Dayton, O.
 McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
 Maforco—See Market Forge Co.
 Manitowoc Plating Works, 24th & Franklin Sts., Manitowoc, Wis.
 Market Forge Co., Garvey St. & Boulevard, Everett, Mass. "Maforco."
 Mirrorscope Co., E. 168th St. & Waterloo Rd., Cleveland, O.
 Monarch Stamping Co., Chappaqua, N. Y.
 National Metalware Co., 92-98 Bogart St., Brooklyn, N. Y.
 Nehls Plating Works, Barney, 1462 Brush St., Detroit, Mich.
 Paramount Mfg. Co., Westfield, N. J.
 Phillips, F. C., Hill St., Stoughton, Mass.
 Rockford Metal Specialty Co., 720 S. Main St., Rockford, Ill.
 Sani Products Co., 209 W. Randolph St., Chicago, Ill.
 Spencer's Sons, I. S., Fair St., Guilford, Conn.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

PLATING COMPOUNDS—See Compounds, Chemical Plating

PLATING NICKEL—See Plating, Brass

PLATINUM POINTS—See Platinum; also Points, Sparking

PLATINUM RIVETS—See Platinum; also Points, Sparking

PLATINUM SCREWS—See Platinum; also Points, Sparking

PLATINUM, Sheet, Rod and Wire

(For contact screws, rivets and points—See also Points, Sparking. For Platinum substitutes—See Points, Sparking)

American Platinum Works, 225-31 N. J. E. R. Ave., Newark, N. J.
 Baker & Co., Newark, N. J. (See page 639.)
 Bishop & Co., Platinum Works, J., Malvern, Pa.
 Dee & Co., Thos. J., 5 S. Wabash Ave., Chicago, Ill.

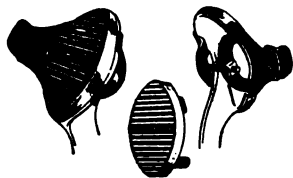
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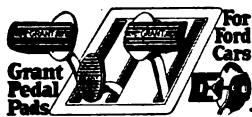
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PLATINUM, Sheet, Rod and Wire (Continued)

Goldsmith Bros., Smelting & Refining Co., 29 E. Madison St., Chicago, Ill.
National Smelting & Refining Corp., 92 John St., New York, N. Y.
Platt Co., C. S., 29 Gold St., New York, N. Y.
R. & H. Platinum Works, 709 Sixth Ave., New York, N. Y. (See page 723.)
Wilson Co., H. A., 97 Chestnut St., Newark, N. J.

PLIERS, Combination

Athol Machine Co., Athol, Mass.
Bavler, Nelson, Cobalt, Conn.
Barcalo Mfg. Co., Buffalo, N. Y. "Bull Dog."
Bergman Tool Mfg. Co., 1573-75 Niagara St., Buffalo, N. Y.
Bernard—See Scholhorn Co.
Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn. "Hayden."
Bonney Forge & Tool Works, Allentown, Pa.
Braunsdorf-Mueller Co., 206 Madison St., Elizabeth, N. J.
Bueam Tool Co., Louisiana, Mo. (See page 883.)
Bull Dog—See Barcalo Mfg. Co.
Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y. "Shur-Kut."
Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."
Clipper Tool Co., 284 Mills St., Buffalo, N. Y. "Perfection."
Crescent Tool Co., 204 Harrison St., Jamestown, N. Y. "Simplex."
Cronk & Carrier Mfg. Co., Merchants National Bank Bldg., Elmira, N. Y.
Cushman Co., Inc., Champaign, Ill. (See page 887.)
Dreadnaught—See Krauter & Co.
Eagle—See Mechanical Specialties Co.
Efficiency Tool Co., 472 Milwaukee St., Milwaukee, Wis. "Five-in-One." (See page 643.)
Erie Tool Works, 11th & French Sts., Erie, Pa.
Five-in-One—See Efficiency Tool Co.
Flash Sales Corp., 4809 N. Ashland Ave., Chicago, Ill. "Pliwrench."
Gittattit—See Smith & Co.
Gloor, Geo. A., 646 Catherine St., Detroit, Mich.
Goodell-Pratt Co., Greenfield, Mass.
Graham Roller Bearing Corp., Condersport, Pa., "K. I. T." (See page 110.)
Handee—See Racine Handy Mfg. Co.
Hargrave—See Cincinnati Tool Co.
Hayden—See Billings & Spencer Co.
Herbrand Co., 109-25 E. State St., Fremont, O.
Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Bull-Dog" Pliers.) (See page 179.)
Horth & Co., Wm., 28 Taylor St., Jamestown, N. Y.
Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn. "Reliance."
K. I. T.—See Graham Roller Bearing Co.
Krauter & Co., Newark, N. J. "Dreadnaught," "Victor." (See page 643.)
Lakeside Forge Co., Erie, Pa. (See page 661.)
Larock—See Mechanical Specialties Co.
McKaig Drop Forge Co., 14 Perry St., Buffalo, N. Y.
Markoni Co., Detroit, Mich. (See page 498.)
Mayhew Steel Products, 291 Broadway, New York, N. Y.
Mechanical Specialties Co., 123 S. Michigan Ave., Chicago, Ill. "Eagle," "Larock."

Mossberg Co., Frank, Attleboro, Mass.
National Plier Co., 67 Forest Ave., Buffalo, N. Y.
Osborne & Co., C. S., Newark, N. J.
Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
Perfect—See Pratt Mfg. Co.
Perfection—See Clipper Tool Co.
Pexto—See Peck, Stow & Wilcox Co.
Pliwrench—See Flash Sales Corp.
Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill. "Perfect."
Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
Red Devil—See Smith & Hemenway.
Reed Mfg. Co., W. Eighth St., Erie, Pa.
Reliance—See Kilborn & Bishop Co.
S. & I. Co., 55-57 Governor St., Springfield, Mass.
Scholhorn Co., Wm., Wooster, Wallace & Chapel Sts., New Haven, Conn. "Bernard."
Shark—See Wakefield Mfg. Co.
Shur-Kut—See Caldwell Tool Mfg. Co.
Simplex—See Crescent Tool Co.
Smith & Co., H. D., Plantsville, Conn. "Gittattit."
Smith & Hemenway, 130 Cort St., Irvington, N. J. "Red Devil."
Starrett Co., L. S., Athol, Mass.
Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.
Thomson Drop Forge Co., W. Main St., Plantsville, Conn.
V. & B.—See Vaughan & Bushnell Mfg. Co.
Vande Water Mfg. Co., Newburgh, N. Y.
Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B."
Victor—See Krauter & Co.
Vichek Tool Co., 3000 E. 87th St., Cleveland, O.
West Haven Mfg. Co., 23 Elm St. (West Haven), New Haven, Conn.
Whitaker Mfg. Co., Chicago, Ill. (See page 311.)

PLIERS, GAS—See Pliers, Combination

PLIERS, GREASE CUP—See Wrenches, Grease Cup

PLIERS, TERMINAL—See Tools, Storage Battery Repair

PLUG BRUSHES—See Brushes, Spark Plug

PLUG BUSHINGS—See Bushings, Spark Plug Testing

PLUG CASES—See Cases, Spark Plug

PLUG CLEANERS—See Cleaners, Spark Plug

PLUG HOLDERS FOR FORDS—See Holders, Magneto Plug

PLUG GAGES—See Gages, Plug and Ring

PLUG SWITCHES—See Switches, Spark Plug

PLUG TESTERS—See Testers, Spark Plug

PLUG WRENCHES—See Wrenches, Nut and Bolt

PLUGS, Charging

Anderson Mfg. Co., Albert & J. M., 289 A St., Boston, Mass.
General Electric Co., Schenectady, N. Y. (See page 697.)

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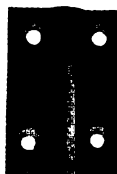
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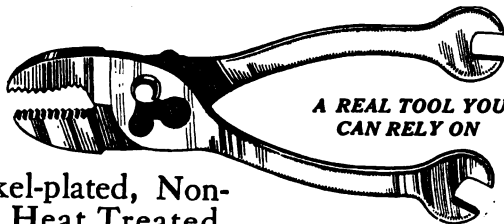
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Russell & Stoll Co., 48 Cliff St., New York, N. Y.
 Universal Electric Stage Lighting Co., 240 W. 50th St., New York, N. Y.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

PLUGS, Core Hole

Hubbard Spring Mfg. Co., Pontiac, Mich.
 (See page 798.)

PLUGS, Radiator Testing, for Fords

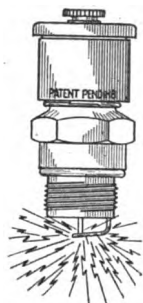
American—See Service Station Equipment Co.
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)
 Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."

PLUGS, Spark

A-A—See Aircraft & Motor Products Co.
 A. C.—See Champion Ignition Co.
 Ace—See Comet Mfg. Co.
 A. I. M.—See Auburn Ignition Mfg. Co.
 Affinity—See Baysdorfer, Otto.
 Air-Friction Carburetor Co., First & Madison Sts., Dayton, O.
 Aircraft & Motor Products Co., 299 Madison Ave., New York, N. Y. "A-A."
 Ajax—See Champion Spark Plug Co.
 Akron Spark Plug Co., Second Nat'l Bank Bldg., Akron, O. "Pilot."
 Allen Specialty Co., 2721 W. Lake St., Chicago, Ill. "Asko."
 Allied Steel Products Co., 7 Walnut St., Aurora, Ill.
 Aluminite—See Green Engineering Co.
 American Ace—See Brach Mfg. Co.
 American Auto Products Co., 1219 L St., N. W., Washington, D. C. "Federal."
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3-A-Co."
 American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
 American Mfg. Co., 100 Main St., Evansville, Ind. "Red Chief."
 Anderson Spark Plug Co., 2700-10 N. Crawford Ave., Chicago, Ill. "Hasteel."
 Answer—See Essential Automotive Products Co.
 Arc-O-Mfg. Co., 2230 S. Michigan Ave., Chicago, Ill.
 Arrow—See Reflex Ignition Co.
 Asko—See Allen Specialty Co.
 Auburn—See New York Mica & Mfg. Co.
 Auburn Ignition Mfg. Co., Richmond, Ind. "Blazer." "A. I. M."
 Automat—See Automatic Ignition Co.
 Automatic Ignition Co., Foster Bldg., Denver, Colo. "Automat."
 Automotive Supply Co., 24-26 Stone St., New York, N. Y. (Sole Distributors for Fowler Spark Plug Mfg. Co., New York, N. Y.)
 B. B.—See Wells-Holmes Co.
 B. G.—See Brewster-Goldsmith Corp.
 B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."
 B. J.—See Bodin Spark Plug Co.
 Baby—See Reflex Ignition Co.
 Ball Bearing Spark Plug Co., 614 Harrison Ave., Harrison, N. J.
 Baysdorfer, Otto, 210 N. 18th St., Omaha, Neb. "Affinity."
 Beaver Spark Plug Co., 1527 E. Lake St., Minneapolis, Minn.
 Belvidere Screw & Machine Co., E. Madison St., Belvidere, Ill.
 Benford Auto Products, Inc., Mt. Vernon, N. Y. "Monarch," "Golden Giant," "White Cap," "Golden Eagle." (See page 645.)
 Bengal Mfg. Co., 1442 N. Eighth St., St. Louis, Mo.
 Benton Co., L. F., 300 Main St., Vergennes, Vt.
 Bethlehem Spark Plug Co., Bethlehem, Pa. (See page 649.)
 Biehl, G. M., 204 S. Centre St., Pottsville, Pa.
 Big Chief—See Vulcan Spark Plug Co.
 Bingham Perfected Spark Plugs, 324 Mulberry St., Rockford, Ill. (See page 647.)
 Blazer—See Auburn Ignition Mfg. Co.
 Blitz—See Randall-Falchney Co.
 Blitz—See Ideal Mfg. Co.
 Bodin Spark Plug Co., 1106 Court St., Allentown, Pa. "B. J."
 Bosch—See American Bosch Magneto Corp.
 Bougie-Mercedes—See Hers.
 Brach Mfg. Co., L. S., 127-29 Sussex Ave., Newark, N. J. "American Ace."
 Brewster-Goldsmith Corp., 33 Gold St., New York, N. Y. "B. G."
 Brown Bag Filling Machine Co.—See Wells Holmes Co.
 Burn-Clean—See Comet Tool & Mfg. Co.
 Carbo-Gas Co., 205 Huron St., Toledo, O.
 Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. "Liberty," "United." (See pages 607 and 741.)
 Chain-O-Spark Co., 1307 Nicollet Ave., Minneapolis, Minn.
 Challenge Spark Plug Co., Crowley & Joliet Sts., Joliet, Ill.
 Champion Ignition Co., Flint, Mich. "A. C.," "Titan," "Cico." (See page 651.)
 Champion Spark Plug Co., 804 Avondale Ave., Toledo, O. "J-D," "Reliance," "Ajax," "Meteor," "Star," "Sta-Rite." (See page 651.)
 Cico—See Champion Ignition Co.
 Comet Tool & Mfg. Co., 2015 S. Ladin St., Chicago, Ill. "Burn-Clean."
 Comet Mfg. Co., Lindsey Bldg., Dayton, O. "Ace."
 D K Spark Plug Co., C. A. C. Bldg., Cleveland, O. "Drips-Klean."
 Dayton Ignition Co., Eaker Bldg., Dayton, O. "Dico."
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)
 Delta Mfg. Co., 9 Delancy St., Newark, N. J.
 Delf Mfg. Co., 90 W. Broadway, New York, N. Y.
 Diamond—See Reflex Ignition Co.
 Dico—See Dayton Ignition Co.
 Drips-Klean—See D. K. Spark Plug Co.
 Durabilt—See W. H. S. Mfg. Co.
 Eagle—See Janesville Products Co.
 Eclipse Mfg. Co., 434 N. Meridian St., Indianapolis, Ind. "Hercules."
 Eklips—See Fulton Co.
 Ellensness—See L. & S. Mfg. Co.
 Essential Automotive Products Co., 511 W. 42d St., New York, N. Y. "3A Micro," "Answer." (See page 783.)
 Everfire Spark Plug Co., 3001 Olive St., St. Louis, Mo.
 Excelsior Leather Washer Mfg. Co., Rockford, Ill. "X. L."
 Express Spark Plug Co. of America, Westover Bldg., Washington, D. C.

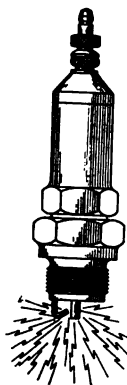
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PLUGS, Spark (Continued)

F. M. C.—See Ford Mica Co.
 Fan Flame Spark Plug Co., 32 Nepperhan St.,
 Yonkers, N. Y.
 Faw Co., J. H., 27 Warren St., New York,
 N. Y. "Red Seal." (See page 429.)
 Federal—See American Auto Products Co.
 Federal Corp., Westfield, Mass. "Liberty."
 "Jumbo," "Victory."
 Fire-Rite Electric Co., 237 Kensington Ave.,
 New Britain, Conn.
 F-I-R-O-L Spark Plug Co., 431 S. Dearborn
 St., Chicago, Ill.
 Flash—See Long Bros.
 Fontaine, Raymond, 100 Osborne Ave., New
 Haven, Conn. "Sure Fire."
 Ford Mica Co., 14 Christopher St., New York,
 N. Y. "F. M. C."
 Fowler Spark Plug Co.—See Automotive Supp-
 ly Co.
 Franks Mfg. Co., 524 Butterworth St., Grand
 Rapids, Mich.
 Fulton Co., 75th & National Aves., Mil-
 waukee, Wis. "Eklipsa."
 (See pages 569 to 574.)
 Fyrc Mfg. Co., 214 E. State St., Rockford,
 Ill.
 Fyresm—See Wellman-Muter Corp.
 General Accessories Corp., Chicago, Ill.
 "Little Jeff."
 Gets Mfg. Co., Andrews, Ind.
 Giant—See Reflex Ignition Co.
 Go Far—See Multiple Spark Plug Mfg. Co.
 Golden Eagle—See Benford Auto Products,
 Inc.
 Golden Giant—See Benford Auto Products,
 Inc.
 Goliath—See Sharp Spark Plug Co.
 Green Engineering Co., Main St. & Burns Ave.,
 Dayton, O. "Aluminite."
 Green Jacket—See Splittorf Electrical Co.
 Griffin Mfg. Co., 113 State St., Boston, Mass.
 H. M. S. Bull Dog—See Hartford Machine
 Screw Co.
 Hall Ignition Mfg. Co., 626 Main St., Will-
 mantic, Conn.
 Hampshire Mfg. Co., Hatfield, Mass. "Wis-
 ard."
 Hartford Machine Screw Co., Hartford,
 Conn. "Master," "H. M. S. Bull Dog."
 (See page 741.)
 Hasteel—See Anderson Spark Plug Co.
 Held Co., Belvidere, Ill.
 Hercules—See Eclipse Mfg. Co.
 Hera, 182 Locust Ave., New York, N. Y.
 "Bougie Mercedes." (See page 682.)
 Hi-Power Spark Plug Co., St. Louis, Mo.
 "Man-O-War."
 Hi-Test Products Co., 669 W. Ohio St., Chi-
 cago, Ill.
 Hyatt Ignition Co., 600 N. High St., Colum-
 bus, O.
 Ideal Mfg. Co., 14th & Harrison Sts. (North
 Kansas City) Kansas City, Mo. "Blitzen."
 Imp—See Improved Motor Accessories Co.
 Improved Motor Accessories Co., 1100 St.
 Clair Ave., Cleveland, O. "Imp."
 J-D—See Champion Spark Plug Co.
 J. E. F. Spark Plug Co., 389-91 Fifth St., Mil-
 waukee, Wis.
 Janesville Products Co., 600 W. Milwaukee
 St., Janesville, Wis. "Eagle," "X. L."
 Johnson Spark Plug Co., 611 Pierce St., Sioux
 City, Ia. "M. C. D."
 Joly—See Lyons Ignition Co.
 Jumbo—See Federal Corp.
 K. L. G.—See Smith & Sons.
 Kahn Mfg. Co., 3601 Villet St., Milwaukee,
 Wis. "Kannon-Ball."

Kannon-Ball—See Kahn Mfg. Co.
 Kant-Mia Spark Plug Co., Green Bay,
 Wis. (See page 649.)
 Keepskleen—See Porter Co.
 Kid—See Reflex Ignition Co.
 Kingston—See Kokomo Electric Co.
 Kokomo Electric Co., 1450 N. Webster St.,
 Kokomo, Ind. "Kingston."
 Kopper King—See Sharp Spark Plug Co.
 Kopper King, Jr.—See Sharp Spark Plug Co.
 L-A—See Lockwood-Ash Motor Co.
 L. K. Auto Ignition Co., 1777 Broadway, New
 York, N. Y. "Prime-Or-Klean."
 L. & S. Mfg. Co., 2026 N. High St., Columbus,
 O. "Ellenness."
 Lauraine Magneto Co., Long Island City, N. Y.
 Leader—See Vital Mfg. Co.
 Leich Electric Co., Genoa, Ill. "Radd."
 Lemke Electric Co., 505-13 Cedar St., Mil-
 waukee, Wis.
 Liberty—See Mosler & Co.
 Liberty—See Casey-Hudson Co.
 Liberty—See Federal Corp.
 Liberty Ignition Co., Westfield, Mass.
 Liberty Spark Plug Co., 95 Lafayette St.,
 Newark, N. J. "Motor King."
 Lightning—See Reflex Ignition Co.
 Lightning Spark Plug Co., 940-42 S. Los An-
 geles St., Los Angeles, Cal.
 Lincoln—See Standish Mfg. Co.
 Little Jeff—See General Accessories Corp.
 Lockwood-Ash Motor Co., Jackson, Mich.
 "L-A," "Sterling." (See page 655.)
 Long Bros., Broadway & Buckeye St., Koko-
 mo, Ind. "Royal," "Service," "Flash."
 Long Distance Spark Plug Co., 2616 Second
 Ave. N., Birmingham, Ala.
 Longaker Co., V. A., 448-50 N. Capitol Ave.,
 Indianapolis, Ind. "Valco."
 Lydon Mfg. Co., 103 N. Wabash Ave., Chicago,
 Ill. "Lynamite."
 Lynamite—See Lydon Mfg. Co.
 Lyons Ignition Co., News Bldg., Paterson, N.
 J. "Joly."
 M. C. D.—See Johnson Spark Plug Co.
 Man-O-War—See Hi-Power Spark Plug Co.
 Marvel Mfg. Co., 901 Madison Ave., Bridge-
 port, Conn. "New-Departure."
 Master—See Hartford Machine Screw Co.
 Meteor—See Champion Spark Plug Co.
 Michigan Spark Plug Co., 409 E. Fort St.,
 Detroit, Mich. "Sure-Spark."
 Mid West Co., 30 Ionia Ave., S. W., Grand
 Rapids, Mich.
 Mid-West Appliance Co., 1255 S. Wabash Ave.,
 Chicago, Ill. (Sole Distributors for Mil-
 waukee Pointless Spark Plug Co., Milwau-
 kee, Wis.)
 Milwaukee Auto Specialty Mfg. Co., 705-15
 Chestnut St., Milwaukee, Wis.
 Milwaukee Pointless Spark Plug Co.—See
 Mid-West Appliance Co.
 Modco—See Modern Comb & Device Co.
 Modern Comb & Device Co., Reibold Bldg.,
 Dayton, O. "Modco."
 Monarch—See Benford Auto Products, Inc.
 Morgan Mfg. Co., Court St., Keene, N. H.
 (See page 675.)
 Mosler & Co., A. R., So. Railroad Ave., Mt.
 Vernon, N. Y. "Liberty," "Triumph," "Ve-
 suvius," "Superior."
 Motor King—See Liberty Spark Plug Co.
 Multiple Spark Plug Mfg. Co., 128 Holden St.,
 Minneapolis, Minn. "Go Far."
 N. Y. & Brooklyn Auto Supply Co., 1717
 Broadway, New York, N. Y. "Quality."
 National Manufacturing Utilities Co.,
 Manhattan Bldg., Chicago, Ill. "Nu
 Statie." (See page 645.)
 New-Departure—See Marvel Mfg. Co.
 New York Mica & Mfg. Co., 27 Clark St., Au-
 burn, N. Y. "Auburn," "Wright."

Everything is listed under the NOUN or principal word

Consider a Plug's Daily Performance Record

That's the big reason for selecting any make. It's the big reason why Reflex Spark Plugs are highly regarded among all classes of buyers. And note the variety of types—

DIAMOND Reflex, for general use.
GIANT Reflex, the heavy service plug.
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FORD Reflex, special type.
ARROW Reflex, regular extension, and Buick.
KID and BABY Reflex, for motorcycles.
LIGHTNING Reflex, for general use.
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Engineers, Manufacturers, Jobbers,
Dealers—An inquiry will receive prompt attention.

The Reflex Ignition Company

3066 West 106th St., Cleveland, U. S. A.

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

TUNGSTEN

TRADE MARK REGISTERED
SPARK PLUG
Always on the job



1/4-inch
Heavy Duty

Big sturdy plug made from the best materials, easily taken apart for cleaning, built with an entire absence of freak features

Mica Heavy Duty type particularly adapted for tractors, where extreme heat is experienced, has double mica insulation.

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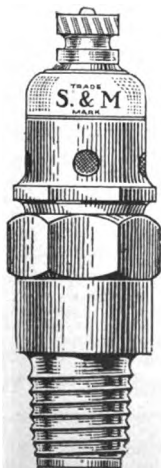
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Marshalltown, Iowa



S. & M. SPARK PLUGS

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This guarantee is made possible by a new principle of ignition, not found in other plugs.

A spark intensifier is located in each plug, which shoots a blue white spark of radio frequency across the main spark gap. This big hot spark insures 100% gas explosion.

The sparking points are located within an auxiliary firing chamber, fully protected from splashing oil and making S. & M. Plugs positively self-cleaning.

After thousands of miles of service the sparking points and porcelains are perfectly clean, even in cylinders which leak oil.

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Bingham Perfected Spark Plug

The Spark Plug that Sparks



Retail at \$1.25
Each

Tell at a glance whether each spark plug is working properly.

Guaranteed to work successfully in oil pumping cylinders.

Liberal Discount to Dealers

Bingham Perfected Spark Plugs

324 Mulberry Street

Rockford, Illinois

PLUGS, Spark (Continued)

- Niles Mfg. Co., Niles, Mich. "Unique."
 Northwind Spark Plug Corp., 42 W. 39th St., New York, N. Y.
 Nu Static—See National Manufacturing Utilities Co.
 Oakes & Dow Co., 311 Atlantic Ave., Boston, Mass. "Sootless."
 Ojus Spark Plug Works, 16 S. Congress Ave., Atlantic City, N. J.
 Olson Co., Wm. O., 431 S. Dearborn St., Chicago, Ill.
 Only Spark Plug Mfg. Co., Fifth & Long Sts., Columbus, O.
 P & P—See Page & Pohle.
 Page & Pohle, 12 Maple St., Lynn, Mass. "P & P."
 Panther—See B. A. T. Co.
 Penn Mfg. Co., 2 E. 14th St., Kansas City, Mo.
 Pennsylvania Rubber & Supply Co., 2819 Prospect St., Cleveland, O. "Prasco."
 Pep—See United Spark Plug Co.
 Perfection—See Standard Ignition Co.
 Perron Spark Plug Co., Main St., Sparta, Wis.
 Pilot—See Akron Spark Plug Co.
 Pittsburgh Visible Spark Plug & Mfg. Co., 460-68 Melwood Ave., Pittsburgh, Pa.
 Porter Spark Plug Co., 4356 Cottage Grove Ave., Chicago, Ill. "Keepskleen."
 Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Clean-B-Z-Prime."
 Prime-Or-Klean—See L. K. Auto Ignition Co.
 Pronto Mfg. & Sales Co., 706 S. 24th St., Omaha, Neb.
 Protecto—See Vital Mfg. Co.
 Prasco—See Pennsylvania Rubber & Supply Co.
 Puritan—See Symonds Co.
 Quality—See N. Y. & Brooklyn Auto Supply Co.
 Quick Start Spark Plug Co., 16-22 Bayden Pl., Newark, N. J.
 Radd—See Leich Electric Co.
 Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.
 Randall-Falchney Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Elitx."
 Ray-O Mfg. Co., 246-52 Fulton St., Brooklyn, N. Y.
 Red Chief—See American Mfg. Co.
 Red Seal—See Faw Co.
 Reflex Ignition Co., 3006 W. 100th St., Cleveland, O. "Arrow," "Lightning," "Giant," "Baby," "Kid," "Diamond." (See page 647.)
 Reliance—See Champion Spark Plug Co.
 Rents Spark Plug Co., 260 Peachtree St., Atlanta, Ga.
 Renu Corp., 273 State St., New Haven, Conn.
 Rex Ignition Mfg. Co., 250 W. 54th St., New York, N. Y. (See page 655.)
 Richey Spark Plug Co., 20 Broad St., New York, N. Y.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)
 Royal—See Long Bros.
 Rumrell Mfg. Co., 117 E. Sandusky St., Findlay, O.
 Rusco Internal Spark Plug & Accessory Co., 3101 S. State St., Chicago, Ill.
 S. & M. Mfg. Co., Vandergriff Bldg., Pittsburgh, Pa. (See page 647.)
 Service—See Long Bros.
 Sharp Spark Plug Co., Wellington, O. "Goliath," "Kopper King," "Kopper King, Jr."
 Shaw Mfg. Co., Oak Park, Ill. "Triumph."
 Smith & Sons, S., 154 Nassau St., New York, N. Y. "K. L. G." (Importers.) (See page 257.)
 Sootless—See Oakes & Dow Co.
 Splittdorf Electrical Co., 98 Warren St., Newark, N. J. "Green Jacket."
 Sta-Rite—See Champion Spark Plug Co.
 Standard Ignition Co., 24-26 W. Water St., Chillicothe, O. "Perfection."
 Standish Mfg. Co., Myles, 419 S. 13th St., Omaha, Neb. "Lincoln."
 Star—See Champion Spark Plug Co.
 Star-K—See Stark-Inland Machine Works.
 Stark Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."
 Sterling—See Lockwood-Ash Motor Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. "V-Ray." (See page 659.)
 Stitt Ignition Co., 16 E. First Ave., Columbus, O.
 Su-Dig—See Superior Motor Power Co.
 Superior—See Mosler & Co.
 Superior Motor Power Co., 77 Spring St., New York, N. Y. "Su-Dig."
 Sure Fire—See Fontaine, Raymond.
 Sure-Spark—See Michigan Spark Plug Co.
 Symms-Brownell Mfg. Co., Sioux Falls, S. Dak. "Wes-Plug."
 Symonds Co., Joseph H., Westfield, Mass. "Puritan."
 T-N-T Spark Plug Co., 2108 Superior Ave., W., Cleveland, O.
 Thomas Spark Plug Co., Roselle Park, N. J. "Twin Seat."
 3-A-Co.—See American Automobile Accessories Co.
 3 A Micro—See Essential Automotive Products Co.
 Titan—See Champion Ignition Co.
 Triumph—See Mosler & Co.
 Triumph—See Shaw Mfg. Co.
 Tungsten Mfg. Co., Marshalltown, Ia. (See page 647.)
 Twin Fire Spark Plug Co., 3964 W. Grand River Ave., Detroit, Mich.
 Twin Seat—See Thomas Spark Plug Co.
 Unique—See Niles Mfg. Co.
 United—See Casey-Hudson Co.
 United Spark Plug Co., Plymouth Bldg., Minneapolis, Minn. "Fep."
 Universal Auto Parts Co., 268 Nartilla St., Portland, Ore. (Pacific Coast Distributors for "Man-O-War" Plugs.) (See page 157.)
 V-D—See Viktry Mfg. Co.
 V-Ray—See Stewart-Warner Speedometer Corp.
 V. & B. 99—See Vaughan & Bushnell Mfg. Co.
 Valco—See Longaker Co.
 Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B. 99."
 Vayo & Co., A. H., 190 N. State St., Chicago, Ill. "Wes."
 Vesuvius—See Mosler & Co.
 Victor Spark Plug Co., 350 Devonshire St., Boston, Mass.
 Victory—See Federal Corp.
 Visible Spark Plug Co., Bowman Bldg., Pittsburgh, Pa. "Vig."
 Viktry Sales Co., 388 Fifth St., Milwaukee, Wis. "V-D." (See page 228.)
 Vital Mfg. Co., 7507 Quincy St., Cleveland, O. "Protecto," "Leader."
 Viz—See Visible Spark Plug Co.
 Vola Trading Co., 42 Broadway, New York, N. Y.
 Vulcan Ignition Co., 25 Church St., New York, N. Y.
 Vulcan Spark Plug Mfg. Co., 1421 Olive St., St. Louis, Mo. "Big Chief."
 W. H. S. Mfg. Co., 2764 Roosevelt Ave., Indianapolis, Ind. "Durabilt."

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PORCELAIN OR MICA PLUGS

whichever are best suited to your customer's needs. There is a BETHLEHEM Spark Plug to suit every requirement, in sizes to fit any car.

94 manufacturers have adopted BETHLEHEM Spark Plugs as standard equipment.

Get in touch with us today—our terms to the trade are right.

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HYDRO-MIX

*Keeps
Out
Carbon*



The Carbonless Motor

does not exist in these days of low proof gas. **Hydro-mix**, however, does improve fuel and reduces carbon to an extent never before accomplished.

Hydro-mix, as illustrated here, takes moisture from the air and automatically injects it into the motor. This device has solved the problem of getting moisture into the mixture in a simple, unfailing way, which uses the principle of condensation of moisture from the warm exhaust air.

No tanks, no connections or other complications—just a cylinder holding a number of small pipes. The cold air from the intake passes through the pipes—condensing the outer warm exhaust.

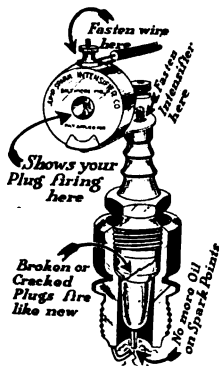
A quick and profitable selling service device that improves engine efficiency and saves fuel. Write for fully illustrated details—also discounts.

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ATTENTION Jobbers and Dealers



Here is a 100% article that will bring you quick returns on your investment—The Jump Spark Intensifier. Nothing to adjust; will not get out of order. Made of hard, solid fibre, steel and brass. Will fire oil-soaked, cracked or broken plugs. You can look through the Intensifier and see it working. Retail price, \$1.00 for a set of four Intensifiers.

A TRIAL OFFER

Two sets—8 Intensifiers—with advertising matter, will be sent to any reputable dealer writing on his business stationery. Write today. For \$1.00.

Jump Spark Company

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A Better Spark Plug in the KANT-MIS



We offer one of the most successful and clean working plugs. The special three-in-one electrode and its common sense arrangement of points, combined with prime insulation, wide inside clearance, generous size and good workmanship insure satisfaction.

\$1.00 at dealers or direct.

KANT-MIS SPARK PLUG CO.
GREEN BAY, WIS.

PLUGS, Spark (Continued)

Wade Mfg. Co., 415 N. Fourth St., Camden, N. J.
 Washington Automobile Supply Co., Washington, Ill.
 Wellman-Muter Corp., 21 E. Van Buren St., Chicago, Ill. "Fyresm."
 Wells Holmes Co., 50 E. 42d St., New York, N. Y. (Sole Distributors for Brown Bag Filling Machine Co., Fitchburg, Mass. "B. B.")
 Wes—See Vay & Co.
 Wes-Plug—See Symms-Brownell Mfg. Co.
 Wesplug—See Western Spark Plug Co.
 Western Screw Products Co., St. Louis, Mo. (See page 749.)
 Western Spark Plug Co., 14th & Harrison Sts., North Kansas City, Mo. "Wesplug."
 Whitaker Mfg. Co., Chicago, Ill. (See page 311.)
 White Cap—See Benford Auto Products, Inc.
 Wizard—See Hampshire Mfg. Co.
 Wright—See New York Mica & Mfg. Co.
 X L—See Excelsior Leather Washer Mfg. Co.
 X L—See Janesville Products Co.

PLUGS, Special and Priming Spark, for Fords

Ac—See Champion Ignition Co.
 Air-Friction Carburetor Co., First & Madison Sts., Dayton, O.
 American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
 Anderson Spark Plug Co., 2700-10 N. Crawford Ave., Chicago, Ill. "Hasteel."
 Answer—See Essential Automotive Products Co.
 Arrow—See Reflex Ignition Co.
 Auburn Ignition Mfg. Co., Richmond, Ind. "Long Henry."
 Automotive Supply Co., 24-26 Stone St., New York, N. Y. (Sole Distributors for Fowler Spark Plug Mfg. Co., New York, N. Y.)
 BJ—See Bodin Spark Plug Co.
 B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."
 Benford Auto Products, Inc., Mt. Vernon, N. Y. "Reliable Monarch."
 (See page 645.)
 Benton Co., L. F., 300 Main St., Vergennes, Vt.
 Bethlehem Spark Plug Co., Bethlehem, Pa. (See page 649.)
 Big Chief—See Vulcan Spark Plug Mfg. Co.
 Bodin Spark Plug Co., 1106 Court St., Allentown, Pa. "BJ."
 Bosch—See American Bosch Magneto Corp.
 Champion Ignition Co., Flint, Mich. "Ac," "Cleo." (See page 651.)
 Champion Spark Plug Co., 804 Avondale Ave., Toledo, O. (See page 651.)
 Cleo—See Champion Ignition Co.
 Clean-E-Z-Prime—See Premier Electric Co.
 Dayton Ignition Co., Eaker Bldg., Dayton, O. "Dico."
 Delta Mfg. Co., 9 Delancey St., Newark, N. J.
 Derr Mfg. Co., 90 W. Broadway, New York, N. Y.
 Dico—See Dayton Ignition Co.
 Durabilt—See W. H. S. Mfg. Co.
 Essential Automotive Products Co., 511 W. 42d St., New York, N. Y. "3A Micro," "Answer." (See page 783.)
 Flash—See Long Bros.
 Fowler Spark Plug Mfg. Co.—See Automotive Supply Co.
 Fyrac Mfg. Co., 214 E. State St., Rockford, Ill.
 Gardner Auto Products Co., Detroit, Mich. (Sole Distributors for Gardner Carburetor & Brass Works, Detroit, Mich.) (See page 323.)

Gardner Carburetor & Brass Works—See Gardner Auto Products Co.
 Gets Mfg. Co., Andrews, Ind.
 Go Far—See Multiple Spark Plug Mfg. Co.
 Goliath—See Sharp Spark Plug Co.
 Griffin Mfg. Co., 113 State St., Boston, Mass.
 Hampshire Mfg. Co., Hatfield, Mass. "Wizard."
 Hartford Machine Screw Co., Hartford, Conn. "Master." (See page 741.)
 Herz, 182 Locust Ave., New York, N. Y. (See page 682.)
 Hasteel—See Anderson Spark Plug Co.
 Janesville Products Co., 600 W. Milwaukee St., Janesville, Wis. "X L."
 Kahn Mfg. Co., 2601 Vilie St., Milwaukee, Wis. "Kannon-Ball."
 Kannon-Ball—See Kahn Mfg. Co.
 Keepskleen—See Porter Spark Plug Co.
 Kopper King—See Sharp Spark Plug Co.
 Kopper King, Jr.—See Sharp Spark Plug Co.
 Leader—See Vital Mfg. Co.
 Lockwood-Ash Motor Co., Jackson, Mich. (See page 655.)
 Long Bros., Broadway & Buckeye St., Kokomo, Ind. "Flash," "Royal."
 Long Henry—See Auburn Ignition Mfg. Co.
 Longaker Co., V. A., 441-50 N. Capitol Ave., Indianapolis, Ind. "Valco."
 M. M. & E. Sales Co., Lenawee Co. Bank Bldg., Adrian, Mich.
 Master—See Hartford Machine Screw Co.
 Mid-West Appliance Co., 1255 S. Wabash Ave., Chicago, Ill. (Sole Distributors for Milwaukee Pointless Spark Plug Co., Milwaukee, Wis.)
 Milwaukee Pointless Spark Plug Co.—See Mid-West Appliance Co.
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)
 Mosler & Co., A. R. S. Railroad Ave., Mt. Vernon, N. Y. "Superior," "Vesuvius."
 Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn. "Go Far."
 National Manufacturing Utilities Co., Manhattan Bldg., Chicago, Ill. "Nu Static." (See page 645.)
 New York Mica & Mfg. Co., 27 Clark St., Auburn, N. Y. "Wright."
 Nu Static—See National Manufacturing Utilities Co.
 Oakes & Dow Co., 311 Atlantic Ave., Boston, Mass. "Sootless."
 Ojus Spark Plug Works, 16 Congress Ave., Atlantic City, N. J.
 Olson Co., Wm. O., 431 S. Dearborn St., Chicago, Ill.
 Panther—See B. A. T. Co.
 Penn Mfg. Co., 2 E. 14th St., Kansas City, Mo.
 Pep—See United Spark Plug Co.
 Perron Spark Plug Co., Main St., Sparta, Wis.
 Porter Spark Plug Co., 4356 Cottage Grove Ave., Chicago, Ill. "Keepskleen."
 Premier Electric Co., 3800-10 Ravenswood Ave., Chicago, Ill. "Clean-E-Z-Prime."
 Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.
 Reflex Ignition Co., 3006 W. 106th St., Cleveland, O. "Arrow." (See page 647.)
 Reliable Monarch—See Benford Auto Products, Inc.
 Rentz Spark Plug Co., 260 Peachtree St., Atlanta, Ga.
 Rex Ignition Mfg. Co., 250 W. 54th St., New York, N. Y. (See page 655.)
 Royal—See Long Bros.
 Rummel Mfg. Co., 177 E. Sandusky St., Findlay, O.
 Sharp Spark Plug Co., Wellington, O. "Goliath," "Kopper King," "Kopper King, Jr."
 Sootless—See Oakes & Dow Co.

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Dependable Spark Plugs



Our Special Free Offer To Dealers

We will include one of these handsome and costly Champion Spark Plug Merchandisers, free of all costs, with a shipment of any one of five different assortments of Champion Spark Plugs. Take this up today with your jobber or send us your name and address for full details.

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AC

The Standard Spark Plug of the World

Most fine makes of passenger cars and most trucks and tractors of established repute are factory equipped with AC Spark Plugs, and have been so equipped for years.

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INSULATION

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"Never Say Gasket

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Unequaled for replacement. Made of exceedingly tough vegetable fibre—chemically treated to resist deterioration.

Swells to fill even minutest irregularities in any surface. Applied without white lead or shellac—affords leak proof tightness to water, grease or gasoline joints.

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Singly, boxed in complete set (see above), on handsome display board (325 Wisoids), in sheets or in rolls for cutting your own.

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SHEET PACKING

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PLUGS, Special and Priming Spark, for Fords (Continued)

Standish Mfg. Co., Myles, 419 S. 12th St., Omaha, Neb.
 Stewart-Warner Speedometer Corp., Chicago, Ill. "V-Ray." (See page 589.)
 Stitt Ignition Co., 16 E. First Ave., Columbus, O.
 Superior—See Mosler & Co.
 Superior Motor Power Co., 77 Spring St., New York, N. Y. "Twin-Tact."
 3 A Micro—See Essential Automotive Products Co.
 Twin-Tact—See Superior Motor Power Co.
 United Spark Plug Co., Plymouth Bldg., Minneapolis, Minn. "Pep."
 V-Ray—See Stewart-Warner Speedometer Corp.
 Valco—See Longaker Co.
 Vayo & Co., A. H., 190 N. State St., Chicago, Ill. "Wes."
 Vesuvius—See Mosler & Co.
 Vital Mfg. Co., 7507 Quincy St., Cleveland, O. "Leader."
 Vulcan Spark Plug Mfg. Co., 1421 Olive St., St. Louis, Mo. "Big Chief."
 W. H. S. Mfg. Co., 2764 Roosevelt Ave., Indianapolis, Ind. "Durablitt."
 Wade Mfg. Co., 415 N. Fourth St., Camden, N. J.
 Wes—See Vayo & Co.
 Wizard—See Hampshire Mfg. Co.
 Wright—See New York Mica & Mfg. Co.
 XL—See Janesville Products Co., 600 W. Milwaukee St., Janesville, Wis.

PLUGS, Tire Repair

Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
 Goodrich Co., B. F., S. Main St., Akron, O.
 Sampson—See Stevens & Co.
 Stevens & Co., 375 Broadway, New York, N. Y. "Sampson." (See page 197.)
 Vitall—See Continental Rubber Works.

PNEUMATIC BARREL PUMPS — See Pumps, Barrel Emptying**PNEUMATIC BRAKES—See Brakes, Air****PNEUMATIC CHUCKS — See Chucks, Pneumatic****PNEUMATIC DRILLS—See Tools, Pneumatic****PNEUMATIC GARAGE DOOR OPENERS — See Openers, Electric and Pneumatic Garage Door****PNEUMATIC MATTRESSES — See Mattresses, Pneumatic****PNEUMATIC SHOCK ABSORBERS—See Shock Absorbers, Friction, Hydraulic and Pneumatic****PNEUMATIC TIRES—See Tires****PNEUMATIC TOOLS—See Tools, Pneumatic****PNEUMATIC WHEELS—See Wheels, Special****POCKET COMPASSES—See Compasses, Motorists' Pocket****POCKET LIGHTS—See Lights, Electric Flash****POCKET METERS—See Gages, Battery****POCKETS, CURTAIN, FOR FORDS—See Pockets, Top Curtain****POCKETS, Door, for Fords**

(See also Covers, Hip; also Tops, Special)

A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
 Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 308.)
 Carroll Mfg. Co., 683 Mass. Ave., Arlington, Mass.
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.
 Esco—See Economy Seat Co.
 Fitzwell—See Niagara Fabric Mfg. Co.
 Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Sure-Fit."
 Hopewell Bros., Watertown, Mass. (See page 965.)
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
 Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."
 Prince Mfg. Co., 6 Liberty Ct., Sumter, S. C. "Princeton."
 Princeton—See Prince Mfg. Co.
 Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.
 Storm King Mfg. Co., Winneconne, Wis. (See page 317.)
 Sure-Fit—See Hodes-Zink Mfg. Co.

POCKETS, STAKE—See Pockets, Truck Stake**POCKETS, Top Curtain for Fords**

Nofalt Motor Products Co., 316 High St., Holyoke, Mass.

POCKETS, Truck Stake

Eberhard Mfg. Co., 2734 Tennyson Ave., Cleveland, O.

POINTS, PLATINUM—See Platinum; also Points, Sparking**POINTS, Sparking**

(Bivets, Contact Points and Borews of Platinum or Platinum Substitute; for Platinum in sheets, rods or wire—See Platinum, Sheet)

American Platinum Works, 225-31 N. J. R. R. Ave., Newark, N. J.
 American Smelting & Refining Co., 32 John St., New York, N. Y.
 Baker & Co., Newark, N. J. (See page 639.)
 Bishop & Co., Platinum Works, J., Malvern, Pa.
 Driver-Harris Co., Harrison, N. J.

Everything is listed under the NOUN or principal word

POINTS, Sparking (Continued)

Electrical Alloy Co., Morristown, N. J.
 Elkon Works of General Electric Co., 515
 Gregory Ave., Weehawken, N. J.
 Gillilan Bros. Smelting & Refining Co., 217
 W. Sixth St., Los Angeles, Cal.
 Goldsmith Bros. Smelting & Refining Co., 29
 E. Madison St., Chicago, Ill.
 H. & L. Ignition Parts Mfg. Co., 300 W.
 Broadway, New York, N. Y.
 K-W Ignition Co., 2900 Chester Ave., Cleve-
 land, O. "Sparkite."
 Lance Mfg. Co., 247 Centre St., New York,
 N. Y.
 Millwood-Brackett Co., Des Moines, Ia.
 (See page 327.)
 Multiple Point Spark Plug Co., 8 Carroll St.,
 Brooklyn, N. Y.
 Nelson Mfg. Co., A., 2700 Southport Ave.,
 Chicago, Ill.
 New Era Spring & Specialty Co., 51-55 Cot-
 tage Grove St., S. W., Grand Rapids, Mich.
 R. & H. Platinum Works, New York,
 N. Y. (See page 723.)
 Schwartz, Daniel S., Bible House, New York,
 N. Y.
 Sparkite—See K-W Ignition Co.
 Tungsten Products Co., Erie Bldg., Cleveland,
 O.
 Weidenhoff, Joseph, 4853 W. Roosevelt Rd.,
 Chicago, Ill.
 Wilson Co., H. A., 97 Chestnut St., Newark,
 N. J.

POLISHERS, ELECTRIC PORTABLE—See
Drills, Electric Portable

POLISHES, Automobile Body

(See also *Soaps, Automobile*)

A-No-One Polish Co., 363 Jefferson Ave.,
 Rochester, N. Y.
 A-O-K—See Ulrich & Co.
 A-S-K—See Dayton Polish Co.
 Acme Polish Co., 7227 Mt. Vernon St., Pitts-
 burgh, Pa.
 Acme White Lead & Color Works, 3250 St.
 Aubin Ave., Detroit, Mich.
 Adams & Elting Co., 716-26 Washington
 Blvd., Chicago, Ill. "Hy-Pol."
 (See page 267.)
 Ajaco—See Alsdorf Corp.
 Alcemo Mfg. Co., 20 Bridge St., Newark,
 N. J.
 Alder Chemical Co., 135 Washington St., Mt.
 Vernon, N. Y. "Star-Clean."
 All-in-One—See Scientific Mfg. Co.
 Alsdorf Corp., A. J., 404 S. Wells St., Chicago,
 Ill. "Ajaco."
 American Automobile Accessories Co., 1700
 Blue Rock St., Cincinnati, O. "Dri-Klean-
 It."
 American Paint Products Co., 810 S. Morgan
 St., Chicago, Ill.
 American Povar Corp., 536 W. 58th St., New
 York, N. Y. "Povar."
 American Textile Mfg. Co., Cleveland, O.
 "Golden Rod," "Pyn-OL."
 Americus Products Mfg. Co., 627 W. Canfield
 Ave., Detroit, Mich.
 Apex-Polishine—See Millers Sons Co.
 Arco Co., Euclid Ave. & E. 65th St., Cleve-
 land, O.
 Armiger Chemical Co., 2155 W. Austin Ave.,
 Chicago, Ill. "Raz."
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y.
 "Blukup."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill.
 "Century."
 Autoglo—See Hill-Smith Metal Goods Co.
 Autogloss Co., 238-42 W. Jefferson Ave., De-
 troit, Mich.
 Auto-Gloss—See Indianapolis Paint & Color
 Co.
 Auto-Klean—See Lucas & Co.
 Auto-Lak—See Johnson & Son.
 Auto-Newer—See Pimbley Paint & Glass Co.
 Autoclean—See Bridgeport Wood Finishing Co.
 Autolustre—See Moore & Co.
 Automotive Mfg. Co., Washington, D. C.
 Auto Products Mfg. Co., Buffalo, N. Y. "Rub-
 on."
 B. P. S.—See Patterson-Sargent Co.
 Baum's Castorine Co., 104 N. George St., Rome,
 N. Y.
 Be-Be-Co—See Boston Blacking Co.
 Bear Cat Products Co., Capitol Hill Sta., Okla-
 homa City, Okla.
 Ben-Hur Metal Polish Co., 206 E. Market St.,
 Crawfordsville, Ind.
 Billings-Chapin Co., 1163 E. 40th St., Cleve-
 land, O. "Reflectal."
 Blood & Co., T. L., 413 Wacouta st., St. Paul,
 Minn.
 Blue Ribbon—See International Metal Polish
 Co.
 Blue Stripe—See Whitman, B. J.
 Body-Nu—See Nu Back Mfg. Co.
 Boston Blacking Co., Third & Potter Sts.,
 Cambridge, Mass. "Be-Be-Co."
 Boyer Chemical Laboratory, 940 N. Clark St.,
 Chicago, Ill.
 Bradley & Vrooman Co., 2629 Dearborn St.,
 Chicago, Ill. "Perma-Lac."
 Brett Dimmer Co., A. H., Mason City, Ia.
 "C. C."
 Bridgeport Wood Finishing Co., New Milford,
 Conn. "Autoclean."
 Brilliant Lustre—See Hall-Thompson Co.
 Brooks & Co., Clarence, 249-77 Chestnut St.,
 Newark, N. J.
 Buffalo Specialty Co., Buffalo, N. Y.
 "Liquid Veneer." (See page 269.)
 Bulls-Eye—See Zinsser & Co.
 Burnishine—See Paul & Co.
 Butler-Halley Co., 33rd & Master Sts., Phila-
 delphia, Pa. "Harco."
 Byron Motor Co., 90 Locust Ave. (Lake View),
 Worcester, Mass.
 C. C.—See Brett Dimmer Co.
 Callery & Co., W. W., 188 36th St., Pittsburgh,
 Pa.
 Camden Chemical Mfg. Co., 18th & Mickle Sts.,
 Camden, N. J. "Greyhound."
 Campbell Glass & Paint Co., Main & Gratiot
 Sts., St. Louis, Mo.
 Cassene Mfg. Co., 3671 Rutger St., St. Louis,
 Mo.
 Century—See Arnstein, Eugene.
 Certain-teed Products Corp., Boatmens Bank
 Bldg., St. Louis, Mo.
 Channell Chemical Co., 58 E. Washington St.,
 Chicago, Ill. "O-Cedar."
 Chemical Specialties Co., 227 South West
 Blvd., Kansas City, Mo.
 Cleanit—See Perkins-Campbell Co.
 Cleanola Co., Fulton Bldg., Pittsburgh, Pa.
 Clean-O-Shine—See Pratt Mfg. Co.
 Colgan Mfg. & Supply Co., 118 Maiden Lane,
 New York, N. Y. "Gem."
 Columbus Varnish Co., Columbus, O.
 "Peerless." (See page 341.)
 Common-Sense Mfg. Co., 506 N. Whittier St.,
 St. Louis, Mo.

Everything is listed under the NOUN or principal word

POLISHES, Automobile Body (Continued)

- Cook, Geo. E., 380 Amsterdam Ave., New York, N. Y.
- Crum Mfg. Co., 815 E. Second St., Wichita, Kans. "New-Lustre," "Wonder."
- Crystal—See Kellerman, I.
- Cunningham & Berrien, 25 W. 43rd St., New York, N. Y. (Sole Distributors for Wonder-Mist Co., Boston, Mass.) (See page 587.)
- Damon Mfg. Co., 901 Rush St., Chicago, Ill. "999."
- Damon Specialty Co., 516 E. Ninth St., Los Angeles, Cal. "Nonolio."
- Day & Co., James B., 224-26 W. Superior St., Chicago, Ill.
- Dayton Polish Co., 416 Bacon St., Dayton, O. "A-S-K."
- Dennison Co., S. A., Winthrop, Mass.
- Despal Chemical Co., 5229 Geary St., San Francisco, Cal. "French Maid."
- Detroit Autocleno Mfg. Co., 915 W. Warren Ave., Detroit, Mich.
- Detroit White Lead Works, 1960 Milwaukee Ave., E. Detroit, Mich. "Rogers Auto-Brite."
- Diamond Holdfast Rubber Co., 10 Auburn Ave., Atlanta, Ga.
- Diamond Polish Co., Brown Bldg., Washington, Pa.
- Dielectric Mfg. Co., 224 S. Vandeventer Ave., St. Louis, Mo.
- Dri-Klean-It—See American Automobile Accessories Co.
- Drury Chemical Products Co., 71 W. Eagle St., Buffalo, N. Y. "Wondrelustre."
- du Pont de Nemours & Co., E. I. (Chemical Products Division), Wilmington, Del.
- du Pont de Nemours & Co., E. I. (Paint & Varnish Division), Wilmington, Del.
- Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-nie Re Nu."
- E-Fec-Tiv—See Permatite Mfg. Co.
- E-Z-Kleen—See Rexine Co.
- Ebersson-Lindsley Paint Co., 1820-22 Morgan St., St. Louis, Mo.
- Eclipse—See Willey Co.
- Em-C-Lac Co., Smith St., Far Rockaway, N. Y.
- Ensign Refining Co., 10703 Quebec Ave., Cleveland, O. "Polishem."
- Ezta-Brite—Queen City Specialty Co.
- Ever-Shine—See Ferre Chemical Co.
- Ezy Brite—See Rodriguez, R. E.
- Fairchild & Bro., M. H., 6 W. Austin Ave., Chicago, Ill. "Royal Mist."
- Feasel's Laboratory, 9-13 Desbrosses St., New York, N. Y. (Sole Distributors for Golden Gate Mfg. Co., New York, N. Y.)
- Ferro Chemical Co., 5656 Broadway, Chicago, Ill. "Ever-Shine."
- Filmist—See Neu Metal Products Corp.
- Fiebing Chemical Co., 238-40 Reed St., Milwaukee, Wis. "Victor."
- Ford's Auto Polish Co., 84 William St., New York, N. Y.
- French Maid—See Despal Chemical Co.
- Ge-See—See Green Bay Supply Co.
- Gem—See Colgan Mfg. & Supply Co.
- Gold Medal—See Hoffman Co.
- Golden Gate Mfg. Co.—See Feasel's Laboratory.
- Golden Rod—See American Textile Mfg. Co.
- Golden Star Polish Mfg. Co., 815-23 E. 21st St., Kansas City, Mo. "Klean Shine."
- Grady Mfg. Co., 250-56 Ely Ave., Long Island City, N. Y. "National."
- Green Bay Supply Co., 518 Maine St., Green Bay, Wis. "Ge-See."
- Greenleaf Products Co.—See Farley & MacNeill.
- Greyhound—See Camden Chemical Mfg. Co.
- Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Brilliant Lustre." (See page 655.)
- Hallett & Co., H. M., Ludington, Mich. "New Life."
- Harco—See Butler-Halley Co.
- Harvey Chemical Co., Wickliffe, O. "Lin-Lac."
- Heaney Mfg. Co., 10-13 India Sq., Boston, Mass. "Revivo."
- Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass. "Autoglo."
- Hoffman Co., Geo. Wm., 6 Cliff St., New York, N. Y. "Gold Medal."
- Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Nuglossa."
- Howard Dustless Duster Co., 290 Franklin St., Boston, Mass.
- Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Rome."
- Hy-Pol—See Adams & Elting Co.
- I. C. U.—See Livingston Co.
- Ieco—See Iisley-Doubleday & Co.
- Iisley-Doubleday & Co., 229-31 Front St., New York, N. Y. "Ieco."
- Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Auto-Glossa."
- Ingham's—See Perfection Polish Co.
- Instant Products Co., 21 Cambria St., Boston, Mass.
- Instant Products Co., 779 E. Genesee St., Buffalo, N. Y. "Life O Wood."
- Instant Products Co., 21 Cambria St., Boston, Mass.
- International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
- Interstate Chemical Co., 667 Garfield Ave., Jersey City, N. J.
- Jackels & Campbell Co., 1622 McGee St., Kansas City, Mo.
- Jewel—See Wadsworth-Howland Co.
- Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Auto-Lak."
- Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
- Kantmar—See Woodtite Laboratories.
- Kellerman, I., 674 Ninth Ave., New York, N. Y. "Crystal."
- Kemoshyne Products, Copewood & Davis Sts., Camden, N. J.
- Keystone Polish Co., 8 Avon Ave., Newark, N. J.
- Klean Shine—See Golden Star Polish Mfg. Co.
- Kleano—See Tay-Miller Mfg. Co.
- Lac-Mar Co., 1228 Tuscarawas St., E., Canton, O.
- Larkins Chemical Co., 150 Catalina Ave., Pasadena, Cal. "Oil of Delight."
- Le Doyen, Frank J., 227 Mangold St., Baltimore, Md. "Var-Noil."
- Lee Mfg. & Chemical Co., Wm. E., 623 Cypress Ave., Kansas City, Mo. "Varnishine."
- Liberty Chemical Works, Chicago, Ill. (See page 753.)
- Life O Wood—See Instant Products Co.
- Lin Lac—See Harvey Chemical Co.
- Liquid Venser—See Buffalo Specialty Co.
- Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."

Everything is listed under the NOUN or principal word



WONDER WORKER

BRILLIANT LUSTRE shows the character of Wonder-Worker leaders giving results hardly believable of any polish. It brings out the factory finish of a car as it stood out in the beginning. Cleans through the coating of grime, grease, dried-on oil and wax polishes down to the original baked-on finish, which it beautifully restores. Leaves no oily surface to collect dust; nothing to streak or gum over like a wax polish; none of the tarnish or corrosion following the use of soap and water. Pint bottle (list) \$1.00.

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Chicago**

Please mention The Automobile Trade Directory

POLISHES, Automobile Body (Continued)

- Lord Polish Co., F. T., 37 Hovey Ave., Cambridge, Mass. "Sun-Glo."
- Lowe Mfg. Co., J. H., Auburn, Rd., Seneca Falls, N. Y. "Owl."
- Lucas & Co., John, 323-30 Race St., Philadelphia, Pa. "Auto-Klean."
- Lustre Mfg. Co., 162 W. Austin Ave., Chicago, Ill.
- Lyknu Polish Mfg. Co., 916 Forbes St., Pittsburgh, Pa.
- Lyon & Healy, 52-58 Jackson Blvd., Chicago, Ill. "Zol."
- McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
- McGregory & Co., Fred H., 245 N. Main St., Decatur, Ill. "Mac's."
- Mac's—See McGregor & Co.
- Majestic—See Suydam Co.
- Martin-Senour Co., 3510 Quarry St., Chicago, Ill.
- Mat's—See Weiss Polish Works.
- Meadowcroft Chemical Co., Saybrook, Conn. "Rite Brite."
- Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.
- Mid West Co., 30 Ionia Ave., S. W., Grand Rapids, Mich.
- Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.
- Millers Sons Co., A. D., Columbus & Preble Aves., Pittsburgh, Pa. "Apex—Polishine."
- Millmore Corp., 215 W. Jefferson Blvd., South Bend, Ind.
- Minard Co., Eames St., Framingham, Mass. "Ol-In-Ol."
- Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
- Mobo—See Stanley Co.
- Monarch—See Suydam Co.
- Monogram—See New York Lubricating Oil Co.
- Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
- Moore & Co., Benjamin, 231-33 Front St., Brooklyn, N. Y. "Autolustre."
- Morgan Mfg. Co., Court St., Keene, N. H. "Nuglos." (See page 675.)
- Mormiles Co., 416 Sherman St., Chicago, Ill.
- Nation Co., 333 W. 16th St., Los Angeles, Cal.
- National—See Grady Mfg. Co.
- National—See Rust-off Mfg. Co.
- National Chemical Co., Canal Fulton, O. "Quick-Shine."
- National Rubber & Specialties Co., 4433-39 Chokering Ave., Cincinnati, O. "Pioneer."
- National Soap Co., 1910 Franklin St., Detroit, Mich.
- Neu Metal Products Corp., 247 Water St., Binghamton, N. Y. "Filmist."
- New Life—See Hallett & Co.
- New Lustre—See Crum Mfg. Co.
- New Method Varnish Co., Realty Bldg., Emma, N. Y. "Uncle Hiram's."
- New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
- 999—See Damon Mfg. Co.
- Nish—See Rath Mfg. Co.
- Noble Piano Co., 4841 Woodward Ave., Detroit, Mich.
- Nonollo—See Damon Specialty Co.
- Norwesco—See Northwestern Chemical Co.
- North State Polish Co., Piedmont Bldg., Charlotte, N. C. "U Can C."
- Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)
- Nozal Polish Mfg. Co., 1338 Belmont Ave., Philadelphia, Pa.
- Nu-Back Mfg. Co., 313-15 S. Second St., St. Louis, Mo. "Body-Nu."
- Nugios—See Morgan Mfg. Co.
- Nugios—See Hollingshead Co.
- NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
- O-Cedar—See Channel Chemical Co.
- Oil of Delight—See Larkins Chemical Co.
- Oilsum—See White & Bagley Co.
- Ol-In-Ol—See Minard Co.
- On E-Z—See Sutorius Auto Top Co.
- Optimus Mfg. Co., 193 Hanover St., Boston, Mass.
- Outlook Co., 5518 Euclid Ave., Cleveland, O. Owl—See Lowe Mfg. Co.
- P & R Auto Specialty Mfg. Co., 1660 Eastern Parkway, Brooklyn, N. Y. "Two Star." (See page 279.)
- Panol—See Panvar Co.
- Panvar Co., Bulletin Bldg., Philadelphia, Pa. "Panol."
- Patterson-Sargent Co., E. 35th & St. Clair Sts., Cleveland, O. "B. P. S."
- Paul & Co., J. C., 930 Roscoe St., Chicago, Ill. "Burnishine."
- Peerless—See Columbus Varnish Co.
- Peerless Mineral Products Co., 71 Jamaica Ave., Brooklyn, N. Y.
- Perfection Polish Co., Waverly, N. Y. "Ingham's."
- Perkins-Campbell Co., Cincinnati, O. "Cleanit." (See page 299.)
- Perma-Lac—See Bradley & Vrooman Co.
- Perma-Lac Mfg. Co., Wilkes-Barre, Pa. (See page 623.)
- Permatex Co., Sheepshead Bay, N. Y. (See page 277.)
- Permatte Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
- Pimbley Paint & Glass Co., 213 S. Sixth St., St. Joseph, Mo. "Auto-Newer."
- Pioneer—See National Rubber & Specialties Co.
- Pioneer Mfg. Co., 3053 E. 87th St., Cleveland, O. "Shino."
- Polac Co., 73 Tremont St., Boston, Mass.
- Polishem—See Ensign Refining Co.
- Povar—See American Povar Corp.
- Pratt Mfg. Co., W. A., 1964 Broadway, New York, N. Y. "Clean-O-Shine."
- Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
- Pyn-Ol—See American Textile Mfg. Co.
- Queen City Specialty Co., Race & Burrows Sts., Cincinnati, O. "Esta-Bright."
- Quick-Shine—See National Chemical Co.
- Quickwork—See Standard Varnish Works.
- Rainoll—See Waterproof Oil Products Co.
- Rath Mfg. Co., Hedley & Richmond St., Philadelphia, Pa. "Nish."
- Ray Mfg. Co., 1627 Columbia Ave., Philadelphia, Pa.
- Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
- Red Devil Mfg. Co., 2807 Locust St., St. Louis, Mo.
- Refine Co., Sheboygan, Mich.
- Reflectal—See Billings-Chapin Co.
- Rents Co., C. J., Greenwood Bldg., Cincinnati, O.
- Reuss Polish Co., Pierce Bldg., Milwaukee, Wis.
- Revivo—See Heaney Mfg. Co.
- Rex—See Armiger Chemical Co.
- Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis. "E-Z-Klean."
- Rie-Nie Re Nu—See Durkee-Atwood Co.

Everything is listed under the NOUN or principal word

POLISHES, Automobile Body (Continued)

- Rite-Brite—See Meadowcroft Chemical Co.
 Robertson Products Co., Theo. B., 700-04 W. Division St., Chicago, Ill. "20th Century."
 Rodriguez, R. E., 54-52 Warren St., New York, N. Y. "Ray Brite," "Simplex."
 Rogers Auto-Brite—See Detroit White Lead Works.
 Rogio—See Ross Gloss Co.
 Rome—See Howard Lubricants Co.
 Ross Gloss Co., Auburndale, Mass. "Rogie."
 Royal Mist—See Fairchild & Bro.
 Rub-On—See Auto Products Mfg. Co.
 Rust-Off Mfg. Co., 133 Northampton St., Buffalo, N. Y. "National."
 S. & B.—See Uno Mfg. Co.
 St. Cloud Drug Co., Seventh & Arch Sts., Philadelphia, Pa. "V-C."
 Saint-Mist Co., 16 Home St., New London, Conn.
 Sanosone Chemical Co., 5 N. 20th St., Philadelphia, Pa.
 Satin Spray Co., 113 Lakeview Ave., Cambridge, Mass.
 Scientific Mfg. Co., 426 Prescott Ave., Scranton, Pa. "All-in-One."
 Shi-Nup Products Co., 1130 Main St., Racine, Wis.
 Shino—See Pioneer Mfg. Co.
 Simonis—See Simons Mfg. Co.
 Simons Mfg. Co., 2121 Michigan Ave., Chicago, Ill. "Simonis."
 Simplex—See Rodriguez, R. E.
 Silkup—See Arnold, N. B.
 Sparkler Mfg. Co., 108 Main St., Fairmount, Ind.
 Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
 Stanley Co., John T., 30th St. & North River, New York, N. Y. "Mebo."
 (See page 783.)
 Star-Clean—See Alder Chemical Co.
 Sterno Corp., New York, N. Y.
 (See page 209.)
 Straight Line Mfg. Co., 27 Thames St., New York, N. Y. "Superlustrate."
 Sun-Glo—See Lord Polish Co.
 Sunshine—See Thumb, E. W.
 Super-Gloss Mfg. Co., 1091 Mission St., San Francisco, Cal.
 Superlustrate—See Straight Line Mfg. Co.
 Sutherland & Co., P., 232 Milk St., Boston, Mass.
 Sutorius Auto Top Co., 621-23 Third Ave., S., Minneapolis, Minn. "On E-Z."
 Suydam Co., M. B., 61st & Butler Sts., Pittsburgh, Pa. "Monarch," "Majestic."
 T-M Gloss—See Tay-Miller Mfg. Co.
 Tay-Miller Mfg. Co., 20th & Market Sts., Philadelphia, Pa. "T-M Gloss," "Kleano."
 Thumb, E. W., 872 Orleans St., Chicago, Ill. "Sunshine."
 Tobey Furniture Co., 200 E. Grand Ave., Chicago, Ill.
 Torkelson Mfg. Co., 414 Selby Ave., St. Paul, Minn.
 20th Century—See Robertson Products Co.
 Two Star—See P & R Auto Specialty Mfg. Co.
 U Can C—See North State Polish Co.
 U-Sav-Your Mfg. Co., 12 Perkins Ave., Warren, Mass.
 Ulrich & Co., 363-65 E. North St., Buffalo, N. Y. "A-O-K."
 Uncle Hiram's—See New Method Varnish Co.
 Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill. "S. & B."
 V-C—See St. Cloud Drug Co.
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill. "Varni-Brite."
 Vaporine Co., 101 S. Wells St., Chicago, Ill.
 Var-Noll—See Le Doyen, Frank J.
 Varni-Brite—See Van Cleef Bros.
 Varni-Shine Co., Columbus, O.
 Varnishine—See Lee Mfg. & Chemical Co.
 Victor—See Fiebing Chemical Co.
 Victroline Co., 39 Pearl St., Boston, Mass.
 Visco Motor Oil Co., 2104 Superior Ave. N. W., Cleveland, O.
 Waterproof Oil Products Co., 1717 Westlake, N., Seattle, Wash. "Rainoil."
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Waxin Mfg. Co., Plymouth Bldg., Minneapolis, Minn.
 Weiss Polish Works, 216 S. Winchester Ave., Chicago, Ill. "Mat's."
 Westfield Chemical Co., Main St., Westfield, Mass. "Zit."
 White & Bagley Co., Worcester, Mass. "Oilzum." (See page 607.)
 Whitman, B. J., 141 Franklin St., Boston, Mass. "Blue Stripe."
 Willey Co., C. A., 14th & Hancock Sts., Long Island City, N. Y. "Eclipse."
 Wilson Co., John V., 76 Brookline Ave., Boston, Mass.
 Wilson-Imperial Co., 115 Chestnut St., Newark, N. J.
 Wonder—See Crum Mfg. Co.
 Wonder-Mist—See Cunningham & Berrien.
 Wonder Worker—See Hall-Thompson Co.
 Wondrelustrate—See Drury Chemical Products Co.
 Woodtite Laboratories, Modesto, Cal. "Kant-mar."
 Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."
 Zit—See Westfield Chemical Co.
 Zol—See Lyon & Healy.

POLISHES, BODY—See Polishes, Automobile Body**POLISHES, BRASS—See Polishes, Metal****POLISHES, Metal**

- A-1 Mfg. Co., Front & Wharton Sts., Philadelphia, Pa.
 A-O-K—See Ulrich & Co.
 A-S-K—See Dayton Polish Co.
 Acme Polish Co., 7227 Mt. Vernon St., Pittsburgh, Pa. "Ayrillite."
 Adams & Elting Co., 716-26 Washington Blvd., Chicago, Ill. "Shinite."
 (See page 267.)
 Ajaco—See Alsdorf Corp.
 Ajax—See Crowell Chemical Co.
 Alsdorf Corp., A. J., 404 S. Wells St., Chicago, Ill. "Ajaco."
 Amalie—See Sonneborn Sons.
 American Metal Polish Co., 89 Winslow Ave., West Somerville, Mass. "North Star," "Meyers."
 American Paint Products Co., 810 S. Morgan St., Chicago, Ill.
 Americus Products Mfg. Co., 627 W. Canfield Ave., Detroit, Mich.
 Anchor—See Hoffman Paint & Varnish Co.
 Anchor—See New England Oil, Paint & Varnish Co.

Everything is listed under the NOUN or principal word

POLISHES, Metal (Continued)

Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.
 Armiger Chemical Co., 2155 W. Austin Ave., Chicago, Ill. "Rex."
 Army & Navy—See Grady Mfg. Co.
 Arnold, N. B., 1 Sigourney St., Brooklyn, N. Y. "Silkup."
 Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Shine-All."
 Ayrolite—See Acme Polish Co.
 Baum's Castorine Co., 104 N. George St., Rome, N. Y.
 Be-Be-Co.—See Boston Blacking Co.
 Ben Hur Metal Polish Co., 206 E. Market St., Crawfordsville, Ind.
 Bertrams—See New Jersey Paint Works.
 Best of All—See Essex Paint & Chemical Co.
 Blue Ribbon—See International Metal Polish Co.
 Boston Blacking Co., Third & Potter Sts., Cambridge, Mass. "Be-Be-Co."
 Bowman-Edson Co., M. K., 65-67 Dey St., New York, N. Y. "Edsonia."
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Brass Nu—See Nu-Back Mfg. Co.
 Brett Dimmer Co., A. H., Mason City, Ia. "C. C."
 Bridgeport Wood Finishing Co., New Milford, Conn. "Metalshine."
 Brigstocke, M. K., 1027-29 Park St., Peekskill, N. Y.
 Briteline—See Harlem Supply Co.
 Burnishine—See Paul & Co.
 C. C.—See Brett Dimmer Co.
 Callery & Co., W. W., 188 36th St., Pittsburgh, Pa. "Winterton."
 Camden Chemical Mfg. Co., 18th & Mickie Sts., Camden, N. J. "Greyhound."
 Campbell Glass & Paint Co., St. Louis, Mo. "Star."
 Car-Brite—See Lord Polish Co.
 Certain-teed Products Corp., Boatmens Bank Bldg., St. Louis, Mo.
 Cleaner Mfg. Co., 2342 Olive St., St. Louis, Mo. "Polishine."
 Cleanola Co., Fulton Bldg., Pittsburgh, Pa. "Spe-De-Shyne."
 Colgan Mfg. & Supply Co., 118 Maiden Lane, New York, N. Y. "Crescent."
 Crescent—See Colgan Mfg. & Supply Co.
 Crowell Chemical Co., 9 Oxford Terrace, Beverly, Mass. "Oxford," "Ajax."
 Cudaby Packing Co., 111 W. Monroe St., Chicago, Ill. "Parrot."
 Curry Bros. Oil Co., 253-55 Franklin St., Boston, Mass. "Superba."
 Dayton Polish Co., 416 Bacon St., Dayton, O. "A-S-K."
 Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers."
 Diamond Polish Co., Brown Bldg., Washington, Pa.
 Dielectric Mfg. Co., 224 S. Vandeventer Ave., St. Louis, Mo.
 Dragon—See Paul & Co.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rite-Nie."
 E-Pec-Tiv—See Permatite Mfg. Co.
 Edsonia—See Bowman-Edson Co.
 Em-C-Lac Co., Smith St., Far Rockaway, N. Y.
 Ericka Mfg. Co., 822 Liberty St., Springfield, Mass. "Shineaul."
 Essex Paint & Chemical Co., Essex, Conn. "Best of All."

Evans & Bro., 3514 Juniata St., St. Louis, Mo.
 Fiebling Chemical Co., 238-40 Reed St., Milwaukee, Wis. "Lusterine."
 Flash Chemical Co., 160-70 Second St., Cambridge, Mass.
 G. W.—See Great Western Oil Co.
 Garratt-Callahan Co., 87 S. Clinton St., Chicago, Ill.
 German—See Sutherland & Co.
 Glittershine—See Grady Mfg. Co.
 Globe—See Raines & Co.
 Go-Co Compound Co., 206 E. 67th St., New York, N. Y.
 Gold Medal—See Hoffman Co.
 Golden Glitter—See Grady Mfg. Co.
 Golden Star Polish Mfg. Co., 315-23 E. 21st St., Kansas City, Mo.
 Goldshine—See Van Tillburg Oil Co.
 Grady Mfg. Co., 350-56 My Ave., Long Island City, N. Y. "Glittershine," "Scourer," "Army & Navy," "Golden Glitter," "Summerhine."
 Great Western Oil Co., 2355 E. 27th St., Cleveland, O. "G. W."
 Greyhound—See Camden Chemical Mfg. Co.
 Hall-Thompson Co., Dept. A, Hartford, Conn. "Wonder Worker," "Nick-E-Lo." (See page 655.)
 Harlem Supply Co., Knickerbocker Bldg., Baltimore, Md. "Briteline."
 Harris Oil Co., A. W., Providence, R. I. "Scourer." (See page 433.)
 Heaney Mfg. Co., 10-12 India Sq., Boston, Mass. "Revivo."
 Hinds & Coon, 124-26 Pearl St., Boston, Mass. "Ruby-Rub."
 Hoffman Co., Geo. Wm., 6 Cliff St., New York, N. Y. "Gold Medal," "U. S."
 Hoffman Paint & Varnish Co., 8 Medford St., Boston, Mass. "Anchor."
 Hollingshead Co., R. M., 112 N. Ninth St., Camden, N. J. "Whiz."
 I. C. U.—See Livingston Co.
 Imperial—See Rath Mfg. Co.
 Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Metal-Brite."
 International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
 Jewel—See Wadsworth-Howland Co.
 Jiffy—See Staedler, Chas.
 Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
 Kemoshyne Products, Copewood & Davis Sts., Camden, N. J.
 Kettler Brass Mfg. Co., Spring & White Sts., Houston, Tex. "Qck Work."
 Lee Mfg. & Chemical Co., Wm. E., 622 Cypress Ave., Kansas City, Mo.
 Liberty Chemical Works, Chicago, Ill. (See page 783.)
 Livingston Co., 161 Day St., New Haven, Conn. "I. C. U."
 Lord Polish Co., F. T., 37 Hovey Ave., Cambridge, Mass. "Lumino," "Car-Brite."
 Lumino—See Lord Polish Co.
 Lumo—See North American Polish Co.
 Lusterine—See Fiebling Chemical Co.
 Lynch, Alonzo K., 310-12 Flushing Ave., Brooklyn, N. Y. "Zee-Ko."
 McGregory & Co., Fred H., 245 N. Main St., Decatur, Ill. "Mac's."
 McLean-Jones Oil & Supply Co., 40 Court St., Boston, Mass.
 Mac's—See McGregory & Co.
 Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Everything is listed under the NOUN or principal word

POLISHES, Metal (Continued)

- Maxine—See Maxine Co.
 Metal-Brite—See Indianapolis Paint & Color Co.
 Metalshine—See Bridgeport Wood Finishing Co.
 Mengo Products Co., 537 Rosedale St. (Wilkinsburg), Pittsburgh, Pa.
 Meyers—See American Metal Polish Co.
 Miller Co., Frank, 349-51 W. 26th St., New York, N. Y.
 Miller Oil Products Corp., Bloomfield, N. J.
 Milmore Corp., 215 W. Jefferson Blvd., South Bend, Ind.
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
 Mobo—See Stanley Co.
 Monarch—See Suydam Co.
 Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
 Moonshine—See Winn, Wm. R.
 Morgan Mfg. Co., Court St., Keene, N. H. "Morganbrite." (See page 675.)
 Morganbrite—See Morgan Mfg. Co.
 Nation Co., 332 W. 16th St., Los Angeles, Cal.
 National Rubber & Specialties Co., 4423-29 Chickering Ave., Cincinnati, O. "Pioneer."
 National Soap Co., 1910 Franklin St., Detroit, Mich. "Quick Work."
 New England Oil, Paint & Varnish Co., Everett, Mass. "Anchor."
 New Jersey Paint Works, Tremont & Wayne Sts., Jersey City, N. J. "Bertrams."
 Nick-E-Lo—See Hall-Thompson Co.
 Noble Plano Co., 4841 Woodward Ave., Detroit, Mich.
 North American Polish Co., 1237 Superior Ave., Cleveland, O. "Lumo."
 North Star—See American Metal Polish Co.
 Northwestern Chemical Co., 785 State St., Warrenton, O. "Norweseco." (See page 275.)
 Norweseco—See Northwestern Chemical Co.
 Nozal Polish Mfg. Co., 1233 Belmont Ave., Philadelphia, Pa.
 Nu-Back Mfg. Co., 218-15 S. Second St., St. Louis, Mo. "Brass-Nu."
 NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 Oxford—See Crowell Chemical Co.
 Parker Refining Co., 1307 W. 11th St., Cleveland, O.
 Parrot—See Cudahy Packing Co.
 Patterson Lubricating Co., 114 Broad St., Boston, Mass.
 Paul & Co., J. C., 939 Roscoe St., Chicago, Ill. "Burnishine." "Dragon."
 Perfection—See Warren Refining & Chemical Co.
 Permatite Mfg. Co., 31 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
 Pioneer—See National Rubber & Specialties Co.
 Pioneer—See Northwestern Chemical Co.
 Polishine—See Cleaner Mfg. Co.
 Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
 Qck Work—See Kettler Brass Mfg. Co.
 Quick Work—See National Soap Co.
 Raimas & Co., 50 Ferry St., New York, N. Y. "Globe."
 Rath Mfg. Co., Hedley & Richmond Sts., Philadelphia, Pa. "Imperial."
 Raydo—See Ulrich & Co.
 Re-Nu-R Products Co., 208 E. Lake St., Minneapolis, Minn.
 Red Cross—See Robertson & Co.
 Revivo—See Heaney Mfg. Co.
 Rex—See Armiger Chemical Co.
 Raxine Co., Pennsylvania & River Sts., Sheboygan, Wis. "Maxine."
 Rie-Nie—See Durkee-Atwood Co.
 Robertson & Co., 1141 W. Madison St., Chicago, Ill. "Red Cross."
 Robertson Products Co., Theo. B., 700-04 W. Division St., Chicago, Ill. "XX."
 Rogers—See Detroit White Lead Works.
 Ruby-Rub—See Hinds & Coon.
 Scource—See Grady Mfg. Co.
 Scource—See Harris Oil Co.
 Shine-All—See Arnstein, Geo. W.
 Shineaul—See Ericka Mfg. Co.
 Rhinite—See Adams & Elting Co.
 Skat Co., 791 Park St., Hartford, Conn.
 Slikup—See Arnold, N. B.
 Solarine Co., 153-55 N. Carpenter St., Chicago, Ill.
 Solshine Mfg. Co., 17 Caldwell St., Charlestown, Mass.
 Sonneborn Sons, L., 263 Pearl St., New York, N. Y. "Amalia."
 Spe-De-Shyne—See Cleanola Co.
 Spear's Sonr Co., Alden, 140 Sixth St., Boston, Mass.
 Staedler, Chas., 190 Claremont Ave., Verona, N. J. "Jiffy."
 Stanley Co., John T., 30th St. & North River, New York, N. Y. "Mobo." (See page 783.)
 Star—See Campbell Glass & Paint Co.
 Stay-Bright Lacquer Co., 58 W. Washington St., Chicago, Ill.
 Summershine—See Grady Mfg. Co.
 Superba—See Curry Bros. Oil Co.
 Sutherland & Co., P., 232 Milk St., Boston, Mass. "Garman."
 Suydam Co., M. B., 61st & Butler Sts., Pittsburgh, Pa. "Monarch."
 Sweet, Charles F., 247 State St., Hartford, Conn.
 Syco—See Symonds Co.
 Symonds Co., Joseph H., Westfield, Mass. "Syco."
 Trafton Co., F. M., 176 Federal St., Boston, Mass.
 U. S.—See Hoffman Co.
 Ulrich & Co., 363-65 E. North St., Buffalo, N. Y. "A-O-K." "Raydo."
 Uno Mfg. Co., 6433 Ravenswood Ave., Chicago, Ill.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Warren Refining & Chemical Co., Cleveland, O. "Perfection."
 Whiz—See Hollingshead Co.
 Winn, Wm. R., 143 Maiden Lane, New York, N. Y. "Moonshine."
 Winterton—See Callery & Co.
 Wonder Worker—See Hall Thompson Co.
 Woodison Co., E. J., 7415 St. Aubin St., Detroit, Mich.
 XX—See Robertson Products Co.
 Zee-Ko—See Lynch, Alonzo K.

POLISHES, NICKEL—See Polishes, Metal**POLISHES, SILVER—See Polishes, Metal****POLISHING CLOTHS—See Wipers****POLISHING COMPOUNDS—See Compounds, Buffing and Polishing****POPPET VALVES—See Valves, Engine Poppet**

Everything is listed under the NOUN or principal word

PORCELAIN

Artistic Porcelain Co., Trenton, N. J.
 Empire China Works, 142-56 Green St., Brooklyn, N. Y. "999."
 Frenchtown Porcelain Co., Trenton, N. J. "775." (See page 651.)
 General Porcelain Co., East Liverpool, O.
 Hartford Faience Co., Hartford, Conn.
 Imperial Porcelain Works, Mulberry St. & New York Ave., Trenton, N. J.
 J. D.—See Jeffery-Dewitt Co.
 Jeffery-Dewitt Co., Butler Ave. & G. T. Ry., Detroit, Mich. "J-D."
 National Porcelain Co., Southard St., Trenton, N. J.
 775—See Frenchtown Porcelain Co.
 999—See Empire China Works.

PORTABLE BUFFERS—See Drills, Electric Portable

PORTABLE BUILDINGS—See Garages

PORTABLE CRANES—See Cranes, Portable

PORTABLE CYLINDER REBORING TOOLS—See Tools, Portable Cylinder Reboring

PORTABLE DRILLS—See Drills, Electric Portable

PORTABLE ELECTRIC LAMPS—See Lamps, Electric Hand or Inspection

PORTABLE GARAGE GREASE GUNS—See Guns, Portable Garage Grease

PORTABLE GARAGES—See Garages, Portable

PORTABLE GRINDERS—See Drills, Electric Portable

PORTABLE HAND PUNCHES—See Punches, Portable Hand

PORTABLE POLISHERS—See Drills, Electric Portable

PORTABLE STEEL CRADLES—See Cradles, Steel Portable

PORTABLE VISES—See Vises, Special and Portable

PORTABLE VULCANIZERS—See Vulcanizers, Portable

POWER HAMMERS—See Hammers, Power

POWER TRANSMITTING ATTACHMENTS—See Attachments, Power Transmitting

PRECISION LATHES—See Lathes, Bench

PRESSED STEEL AXLE HOUSINGS—See Housings, Pressed Steel

PRESSED STEEL BRAKE DRUMS—See Drums, Brake

PRESSED STEEL FAN PULLEYS—See Pulleys, Pressed Steel Fan

PRESSED STEEL FRAMES—See Frames, Pressed Steel

PRESSED STEEL HUB FLANGES—See Flanges, Hub

PRESSED STEEL PARTS—See Stampings

PRESSED STEEL STEP HANGERS—See Hangers, Pressed Steel Step

PRESSES, Arbor

Atlas Mfg. Co., Dept. D., Millvale Sta., Pittsburgh, Pa. (See page 875.)
 Atlas Press Co., 1900 N. Pitcher St., Kalamazoo, Mich.

Barnes Co., W. F. & John, 439 Ruby St., Rockford, Ill.

Bartlett, Edwin E., 41 Crown St., Nashua, N. H. "Greenard."

Bertschy-Hamilton Mfg. Co., 1954 Telegraph Ave., Oakland, Cal. "Push and Pull."

Canedy-Otto Mfg. Co., Chicago Heights, Ill.

Columbia Mfg. Co., Belleville, Ill.

Crane Fuller Co., 54 Lake St., Arlington, Mass.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)

Ekern-Turk Mfg. Co., Pipestone, Minn.

Fox—See Omaha Steel Works.

Greb Co., 195 State St., Boston, Mass. (See page 687.)

Geier Co., P. A., 540 E. 105th St., Cleveland, O. (See page 661.)

Greenard—See Bartlett, Edwin E.

Helts Garage, L. R., Muscatine, Ia.

Hydraulic Press Mfg. Co., Mt. Gilead, O.

Lipe, R. M., 230 The Alameda, San Jose, Cal.

Lourie Mfg. Co., Harvard Pk., Springfield, Ill.

Lucas Machine Tool Co., 523 E. 99th St., Cleveland, O.

M. E. C.—See Manufacturers Equipment Co.

Masley Mfg. Co., York, Pa. (See page 661.)

Manufacturers Equipment Co., Waller Ave. & Fillmore St., Chicago, Ill. "M. E. C."

Metalwood Mfg. Co., 3450 Wight St., Detroit, Mich.

Mills Mfg. Co., Sabina, O.

Myers Machine Tool Co., Second & Chestnut Sts., Columbia, Pa.

Naperville Machine Co., Naperville, Ill. "Perfection."

Nicholson & Co., W. H., 12 Oregon St., Wilkes-Barre, Pa.

Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.

Omaha Steel Works, 48th & Leavenworth Sts., Omaha, Nebr. "Fox."

Perfection—See Naperville Machine Co.

Perkins Machine Co., Warren, O.

Post Garage & Repair Shop, Amos Church St., Catskill, N. Y.

Push and Pull—See Bertschy-Hamilton Mfg. Co.

Watson-Stillman Co., 50 Church St., New York, N. Y.

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 661.)

Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.

Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.

Everything is listed under the NOUN or principal word

THE**WEAVER****20-TON
FORCING
PRESS****For the Garage**

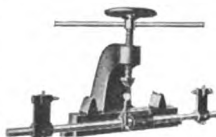
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WEAVER MANUFACTURING CO.**2177-79 So. 9th****Springfield, Illinois****GEIER
EFFICIENCY
PRESSES**

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Utility Arbor
Press**

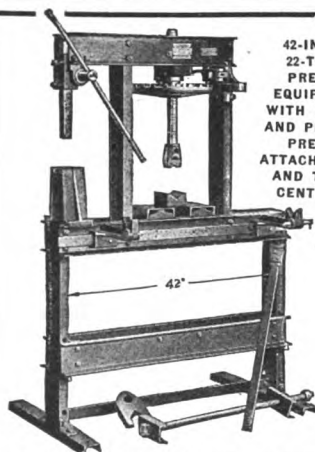
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Assembly Tables**

**Riveting Jigs
Gear Pullers
Wrecking Trucks
Crawlers**

**Battery Stands
Straightening
Presses**

CONTINENTAL AUTO PARTS CO., 2207 E. 17th St., Columbus, Ind.

Please mention The Automobile Trade Directory

PRESSES, Bench Straightening

Atlas Mfg. Co., Dept. D., Millvale St., Pittsburgh, Pa. (See page 873.)
 Atlas Press Co., 1900 N. Pitcher St., Kalamazoo, Mich.
 Chambersburg Engineering Co., Derbyshire St., Chambersburg, Pa.
 Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)
 Geier Co., P. A., 540 E. 105th St., Cleveland, O. (See page 661.)
 Lourie Mfg. Co., Harvard Pk., Springfield, Ill.
 Plets & Sons, Carl, 3116 Spring Grove Ave., Cincinnati, O.
 Springfield Machine Tool Co., Southern Ave. & F. C. & St. L. Ry., Springfield, O.
 Watson-Stillman Co., 50 Church St., New York, N. Y.

PRESSES, BROACHING—See Machines, Broaching**PRESSES, Bushing Swedging**

Burr & Sons, J. T., 429 Kent Ave., Brooklyn, N. Y.
 Greb Co., 195 State St., Boston, Mass. (See page 667.)

PRESSES, CRANKSHAFT STRAIGHTENING—See Presses, Bench Straightening**PRESSES, DEALERS IN—See Machinery, Dealers in****PRESSES, FORCING—See Presses, Arbor****PRESSES, RIM—See Presses, Truck Rim Applying****PRESSES, Storage Battery Plate**

(For straightening bent or buckled plates or forcing the active materials into place)

Ambu—See American Bureau of Engineering.
 American Bureau of Engineering, 1609 S. Michigan Ave., Chicago, Ill. "Ambu." (See page 147.)

PRESSES, STRAIGHTENING—See Presses, Bench Straightening**PRESSES, Tire**

Elmes Engineering Works, Chas. F., 235 N. Morgan St., Chicago, Ill.
 Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill.
 Hydraulic Press Mfg. Co., Mt. Gilead, O.
 Lourie Mfg. Co., Harvard Pk., Springfield, Ill.
 Southwark Foundry & Machine Co., 420 Washington Ave., Philadelphia, Pa.
 Watson-Stillman Co., 50 Church St., New York, N. Y.

PRESSES, Truck Rim Applying

Excelsior Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill.

PRESSINGS, METAL—See Stampings**PRESSURE CONTROLLERS, VULCANIZER—See Controllers, Vulcanizer Steam Pressure****PRESSURE LUBRICATORS—See Lubricators, Pressure****PRESSURE REGULATORS—See Regulators, Acetylene****PRESSURE SYSTEM TIRE CONNECTIONS—See Connections, Air System Tire****PRESSURE OR REDUCING VALVES—See Regulators, Tank Pressure****PREVENTERS, GLARE—See Dimmers, Headlight****PREVENTERS, RUST—See Compounds, Rust Preventing and Removing****PRICK PUNCHES—See Punches, Center Prick and Drift****PRIMARY CABLE—See Wire, Insulated****PRIMER BUSHINGS—See Bushings, Starter or Primer Attaching****PRIMERS, Engine**

(See *Boosters, Mixture*; also *Miscro, Fuel*; also *Starters*)

A-V-G.—See Cox Brass Mfg. Co.
 Bailey Co., W. J., 401 Mulberry St., Newark, N. J. "C. B."

Bay State Pump Co., 564 E. First St. (So. Boston), Boston, Mass. "Copley."

Bear Mfg. Co., Rock Island, Ill. (See page 405.)

Bourse—See Randall-Falchney Co.

Buckeye—See Central Brass & Fixture Co.

C. B.—See Bailey Co.

Carleton Co., 170 Summer St., Boston, Mass. "Master."

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Colonial Auto & Supply Co., 101 W. 66th St., New York, N. Y.

Copley—See Bay State Pump Co.

Cox Brass Mfg. Co., Albany, N. Y. "A-V-G." (See page 168.)

Detroit Modern Mfg. Co., 33-39 Woodward Ave., Detroit, Mich. "Sure-Shot."

Eck Vapor & Primer Co., 12 Vick Pk., Rochester, N. Y.

Engineering Equipment Co., State Life Bldg., Indianapolis, Ind.

Hagstrom Bros. Mfg. Co., Lindsay, Kans.
 Ideal Auto Primer Corp. of Los Angeles, 708½ W. Eighth St., Los Angeles, Cal.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. "Prime-ur." (See page 173.)

Interstate Electric Co., Baronne & Perdido Sts., New Orleans, La.

Jorgensen Mfg. Co., Waupaca, Wis.

Longest Bros. Co., 725-29 S. Third St., Louisville, Ky.

Everything is listed under the NOUN or principal word

PRIMERS, Engine (Continued)

- Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.
 Maltby Auto Specialty Co., 303 W. Main St., Battle Creek, Mich.
 Master—See Carleton Co.
 Master Primer Co., 130 E. Larned St., Detroit, Mich. (See page 667.)
 Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.
 Motor Specialties Co., Beaver St., Waltham, Mass.
 Perkins Appliance Co., 4 Birnie Ave., Springfield, Mass. "Victory."
 Peru Brass & Mfg. Co., Peru, Ind.
 Prima—See Turner Brass Works.
 Prime-ur—See Imperial Brass Mfg. Co.
 Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.
 Randall-Patchney Co., 76 Atherton St., Boston, Mass. "Bourse."
 Smith, Fred, 56 W. Park Pl., Stamford, Conn.
 Sure-Shot—See Detroit Modern Mfg. Co.
 Sure Start Primer Co., 18 W. 34th St., New York, N. Y.
 Turner Brass Works, Sycamore, Ill. "Prima."
 Victory—See Perkins Appliance Co.
 Walker & Co., W. T., 11 Pemberton Sq., Boston, Mass.

PRIMERS, Engine, for Fords

(See also *Boosters, Mixtures; also Motors, Fuel; also Starters*)

- Bay State Pump Co., 564 E. First St. (So. Boston), Boston, Mass. "Copley."
 Copley—See Bay State Pump Co.
 Gould Mfg. Co., Seneca Falls, N. Y.
 Henes Sales Corp., 462 Deming Pl., Chicago, Ill.
 Home Light Co., 3353 Milwaukee Ave., Chicago, Ill.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 J. & B. Mfg. Co., Pittsfield, Mass.
 Jorgensen Mfg. Co., Waupaca, Wis.
 King, W. C., Ryder St. & Montgomery Ave., Litchfield, Ill.
 Maltby Auto Specialty Co., 303 W. Main St., Battle Creek, Mich.
 Master Primer Co., 130 E. Larned St., Detroit, Mich. (See page 667.)
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Peru Brass & Mfg. Co., Peru, Ind.
 Smith, Fred, 56 W. Park Pl., Stamford, Conn.
 Sure Start Primer Co., 18 W. 34th St., New York, N. Y.
 T-R—See Tolman-Reeve Engineering Corp.
 Tolman-Reeve Engineering Corp., 3104 Michigan Ave., Chicago, Ill. "T-R."
 Turner Brass Works, Sycamore, Ill.
 Zimmerman Mfg. Co., 247-51 W. Lincoln Way, Valparaiso, Ind.

PRIMING CUPS—See Cups, Spring Key Priming

PRIMING FLUIDS—See Fluids, Priming

PRIMING PLUGS FOR FORDS—See Plugs, Special

PRINTING MACHINES, BLUE—See Machines, Blue Printing

PROPELLER SHAFT STEADY BEARINGS—See Bearings, Drive Shaft Steady

PROPELLER SHAFTS—See Shafts, Propeller

PROPELLERS, SHAFT—See Mills, Dry Shaft Bearing End for Fords

PROPS OR SUPPORTS, CAR—See Jacks, Tire Saving

PROTECTORS, CAR—See Covers, Fender

PROTECTORS, Coil Box, for Fords

(Metal Shield to prevent rain or dampness reaching Coil Box or Terminal)

- A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
 Accurate Cover Co., 373 Canal St., New York, N. Y.
 Acorn Motor Equipment Corp., 44 Penn St., Brooklyn, N. Y. "Hadco." (See page 121.)
 American Auto Products Co., 1319 L St., N. W., Washington, D. C. "Bone-Dry."
 Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
 Bone-Dry—See American Auto Products Co.
 Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 895.)
 Casco Mfg. Co., Jackson St., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)
 Central Auto Top & Leather Co., 421 N. Capitol Ave., Indianapolis, Ind.
 Champion Chemical Co., Linden Ave. & Monroe St., Springfield, O.
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Texas.
 Cooper Auto Supply Co.—See Casco Mfg. Co.
 Co-Zee—See Omaha Auto Top Co.
 Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
 D & D—See Droutman Mfg. Co.
 Dow Co., Louisville, Ky. (See page 157.)
 Droutman Mfg. Co., 302-06 W. 53d St., New York, N. Y. "D & D."
 Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill.
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.
 Hadco—See Acorn Motor Equipment Co.
 Hart-Bell Co., 48 S. Water St., Poughkeepsie, N. Y.
 Hettrick Mfg. Co., Toledo, O.
 Hodes-Zink Mfg. Co., 313 W. State St., Fremont, O. "Sure-Fit."
 Highway Rubber Corp., 1009 Chestnut St., St. Louis, Mo.
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 McKay-Grubb Rubber Co., 1110 Hennepin Ave., Minneapolis, Minn. "Russell."
 Major Coil Protector Co., 370 Vinewood Ave., Detroit, Mich.
 Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Sentry."
 Miller Mfg. Co., 905 Gates Ave., Brooklyn, N. Y.
 Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)
 Perkins-Campbell Co., Cincinnati, O. (See page 209.)

Everything is listed under the NOUN or principal word

PROTECTORS, Coil Box, for Fords (Continued)

Philbrick-Lavering, 169 Massachusetts Ave., Boston, Mass.

Powers Mfg. Co., Waterloo, Ia.
(See page 530.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."

Russell—See McKay-Grubb Rubber Co.

Safe-T-First Gasket Co., 316 W. 134th St., New York, N. Y.

Sentry—See Mil-Mac Mfg. Co.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Sure-Fit—See Hodes-Zink Mfg. Co.

Tatco—See Thomas Auto Top Co.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."

Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.

Tyler Mfg. Co., 755 Boylston St., Boston.

Tymco—See Tyler Mfg. Co.
Mass. "Tymco."

PROTECTORS, COWL—See Covers, Fender

PROTECTORS, CUFF—See Protectors, Sleeve

PROTECTORS, Door

(Leather or fabric pads to protect the finish of the door)

Angelus—See Parker & Waterman Mfg. Co.

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Bemco—See B. E. Mfg. Co.

Bnab & Scheu, 500-10 Webster St., Cincinnati, O. (See page 895.)

Campbell—See Perkins-Campbell Co.

Carroll Mfg. Co., 683 Mass. Ave., Arlington, Mass.

Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.

Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Fitzwell—See Niagara Fabric Mfg. Co.

Hopewell Bros., Watertown, Mass.
(See page 965.)

McKinnon Dash Co., Buffalo, N. Y.
(See page 686.)

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Parker & Waterman Mfg. Co., 1203 W. Washington St., Los Angeles, Cal. "Angelus."

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."

Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal.

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill.

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.

PROTECTORS, EYE—See Goggles, Mechanics'

PROTECTORS, FENDER—See Covers, Fender

PROTECTORS, Front Wheel Bearing for Fords

Bull Dog—See Thomas Mfg. Co.

Thomas Mfg. Co., W. H. Spencer, Ia. "Bull Dog." (See page 572.)

PROTECTORS, Lens—See Gaskets, Headlight Lens

PROTECTORS, SEAT—See Covers, Fender

PROTECTORS, Sleeve and Cuff

Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)

Bemco—See B. E. Mfg. Co.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Fitzwell—See Niagara Fabric Mfg. Co.

Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.

Niagara Fabric Mfg. Co., 47 Greene St., New York, N. Y. "Fitzwell."

Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.

PROTECTORS, SPARK PLUG—See Protectors, Coil Box for Fords

PROTECTORS, Spark Plug Point

(Small metal shields or protectors to be attached to spark plug before it is placed in the cylinder to prevent the oil from fouling the points)

Ballard-Sutcliffe Co., 537 Turk St., San Francisco, Cal. "W. W."

W. W.—See Ballard-Sutcliffe Co.

PROTECTORS, TIMER WIRE GUARD—See Guards, Timer Wire for Fords

PROTECTORS, TIRE—See Treads, Detachable; also Shoes, Inner Tire

PUBLICATIONS—See Books and Periodicals

PULLERS, Axle Bearing Sleeve, for Fords

American—See Service Station Equipment Co.

C. & M.—See Cantrell-Miller Machine Works.

Cantrell-Miller Machine Works, 1246-54 Lar-kin St., San Francisco, Cal. "C. & M."

Hinckley-Myers Co., Water St., Jackson, Mich.

Koch, Nicholas E., 1123 W. 37th Drive, Los Angeles, Cal.

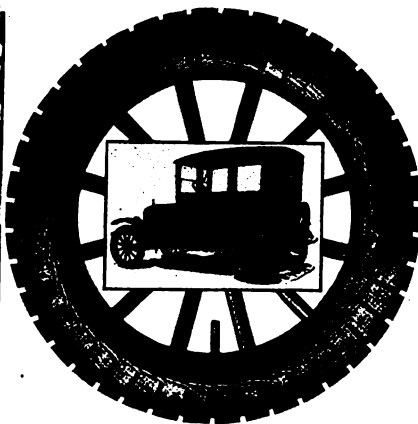
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Big Money Can Be Made From Junk Cas- ings By Using Our **CATERPILLAR** *Tire-Making Tools*

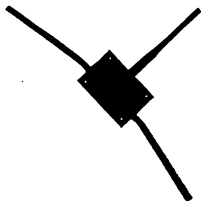


Factory seconds and slightly worn casings can be turned into mighty good money when you have a set of **CATERPILLAR** Tire-Making Tools. Cut the casing with a **CATERPILLAR** Chopper, bind it with a **CATERPILLAR** Binder, using Chain made on a **CATERPILLAR** Shaper. Apply with a **CATERPILLAR** Stretcher. The customer drives away with his tires protected from puncture, and valuable extra mileage assured, with less than half the customary expense.



CATERPILLAR Tires creep slightly over the regular casings. This creeping pulls out nails or tacks and breaks off glass that may have stuck in the regular casing. Many punctures and slow leaks are prevented. Sand and dirt are thrown out by centrifugal force as soon as they enter. The regular casing shows no wear from this after hundreds of hard miles. Tire changes are not hindered. Chains become unnecessary.

Open a **CATERPILLAR** Shop of your own. Only a few dollars needed for tools and some casings. Or add a new, profitable department to your present business. The country garage will find really **BIG** business in **CATERPILLARS** this fall. Soon ruts will be frozen, and the added protection of **CATERPILLARS** can be easily sold to farmers and merchants. Send right now for low price quotations and further particulars. All supplies sold here from Chicago office.



Caterpillar
Mfg. Co.
608 S. Dearborn St.
CHICAGO. ILL.



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PULLERS, Axle Bearing Sleeve, for Fords (Continued)

Railway Specialty Co., Atchison, Kans. "Rysco."

Rysco—See Railway Specialty Co.

Sells & Co., O. P., 1834 Broadway, New York. (Sole Distributors for Cantrell-Miller Machine Works, San Francisco, Cal. "C. & M.")

Service Station Equipment Co., 37th St. and S. Ashland Ave., Chicago, Ill. "American."

PULLERS, Axle Housing, for Fords

(Tool for separating propeller shaft housing from differential housing)

Handee—See Racine Handy Mfg. Co.

Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."

Universal Mfg. Co., Racine, Wis.

PULLERS, BATTERY CONNECTOR—See Tools, Storage Battery Repair

PULLERS, Bearing

Armature Rewinding Co., 3537 Bell Ave., St. Louis, Mo. (See page 955.)

Campbell Auto Works, 238-40 N. El Dorado St., Stockton, Cal.

Durham Co., P. J., 244 W. 49th St., New York, N. Y.

PULLERS, BUSHING, FOR FORDS—See Extractors, Bushing

PULLERS, CAR—See Winches and Blocks

PULLERS, Cotter Pin

American Cotter Pin Co., Park Bldg., Pittsburgh, Pa. "Mays."

Auto Forge Sales Co., 80 King Ave., Columbus, O.

Braunsdorf-Mueller Co., 205 Madison St., Ellsabeth, N. J.

Brewer Tichener Corp., Cortland, N. Y.

Buffum Tool Co., Louisiana, Mo. (See page 883.)

Carver Tool Works, Spring Valley, N. Y.

Chapin-Stephens Co., Pine Meadow, Conn. "Elmore."

Clinton Machine Works, 460 High St., Clinton, Mass.

Cushman Co., Inc., Champaign, Ill. (See page 887.)

E-Z—See Syracuse Wrench Co.

Elmore—See Chapin-Stephens Co.

Katy Kotter—See Katy Tool Mfg. Co.

Katy Tool Mfg. Co., 908 E. Lake St., Minneapolis, Minn. "Katy Kotter."

Kraeuter & Co., Newark, N. J. (See page 643.)

McClarren Motor Car Co., Greensburg, Pa.

Maroy Tool Works, Putnam, Conn.

May's—See American Cotter Pin Co.

Mayhew Steel Products, 291 Broadway, New York, N. Y.

Milwaukee Tool & Forge Co., 220 Becher St., Milwaukee, Wis.

Mossberg Co., Frank, Attleboro, Mass.

Mound Tool Co., Dept. D, Seventh & Hickory Sts., St. Louis, Mo. (See page 887.)

S. & I. Co., 55-57 Governor St., Springfield, Mass.

Storts & Son, John, Philadelphia, Pa.

Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.

Syracuse Wrench Co., Syracuse, N. Y. "E-Z."

Vlcek Tool Co., 3000 E. 87th St., Cleveland, O.

West Haven Mfg. Co., 22 Elm St. (W. Haven), New Haven, Conn.

PULLERS, Gear and Wheel

Atlas Mfg. Co., Dept. D, Millvale Sta., Pittsburgh, Pa. (See page 875.)

American—See Service Station Equipment Co.

Braunsdorf-Mueller Co., 205 Madison St., Ellsabeth, N. J.

Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)

Coombs, C. B., Walker & State Sts., Indianapolis, Ind.

Crane Puller Co., 54 Lake St., Arlington, Mass.

Dover, George W., 1012 Eddy St., Providence, R. I.

F & W—See Lewis & Milligan.

Greb Co., 195 State St., Boston, Mass. (See page 667.)

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Greb Pullers.) (See page 179.)

Hunt Mfg. Co., Geo. L., 1030 Wisconsin Ave., Boscobel, Wis.

J. & B. Mfg. Co., Pittsfield, Mass.

Kerschbaum, M. E., New York, N. Y.

Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind. "F & W."

Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.

Service Station Equipment Co., 37th St. and S. Ashland Ave., Chicago, Ill. "American."

Shepard-Thomason Co., 506-08 W. Pico St., Los Angeles, Cal. "Thomason." (See page 629.)

Shepard—See Zim Mfg. Co.

Stenberg Mfg. Co., John E., 3228 Craft St., Chicago, Ill.

Zim Mfg. Co., 208 N. Wabash Ave., Chicago, Ill. "Shepherd."

PULLERS, Gear, for Fords

(For removing timing gears and generator pinions.)

Hinckley-Myers Co., Water St., Jackson, Mich.

Shepard-Thomason Co., 506-08 W. Pico St., Los Angeles, Cal. "Thomason." (See page 629.)

Thomason—See Shepard-Thomason Co.

PULLERS, REAR AXLE SLEEVE FOR FORDS—See Pullers, Axle Bearing Sleeve

PULLERS, SLEEVE BEARING FOR FORDS—See Pullers, Axle Bearing Sleeve

PULLERS, WHEEL—See Pullers, Gear

PULLERS, Wheel, for Fords

(For removing rear wheels)

Am-Pe-Co Sales Co., Marshalltown, Iowa. (See page 407.)

Baltimore Hub-Wheel & Mfg. Co., Baltimore, Md. "Hubco." (See page 503.)

Benford Auto Products, Inc., Mt. Vernon, N. Y. (See page 645.)

Buckeye—See Central Brass & Fixture Co.

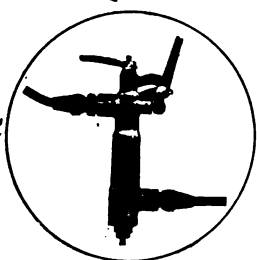
C. & M.—See Cantrell-Miller Machine Works.

Cantrell-Miller Machine Works, 1246-54 Larkin St., San Francisco, Cal. "C. & M."

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Cooper Mfg. Co., Marshalltown, Ia. (See page 574.)

Everything is listed under the NOUN or principal word



Master

ELECTRICAL PRIMER

The Master Electrical Primer has solved the problem of difficult automobile starting in the most simple, efficient and logical manner—through heating the gasoline to a dry vapor that explodes almost instantly. That is why it was chosen as the standard equipment on five leading automobiles; why it has been chosen by thousands of auto owners who want to start their cars within five seconds in any weather.

Write today for our interesting booklet.

Master Primer Company
130 E. Larned St. Detroit, Mich.



Price \$6.00

This Pump Has Inflated a 40x8 Tire

It has been used by a Tire Dealer for more than 6 months, instead of a compressor. The chauffeur of a 7-passenger Cadillac uses it and says, "Quicker and Easier

Than My Engine-Driven Pump." A new pump, but one that is now being used from Jacksonville to Seattle and from Boston to Los Angeles.

6 BIG ADVANTAGES:

1. Compound Leverage.
2. Seamless Cylinder.
3. Leakless Valve.
4. Graton & Knight Leather Washer.
5. Unique Piston-head Construction.
6. Permanent Attachments.



REECE-HILTON, Inc. TROY, N. Y.

GREB AUTOMATIC GRIP PULLER

BEACH PATENT

"The One Best Bet" in Wheel Gear and Bearing Pullers. Combinations of two or three jaws. Six jaws in all. Four pullers in one.

A Complete Outfit



No. 1—Senior Size Puller, Wire Wheel Hub. List Price, \$25.00. Dealer's Discount, 10%.



No. 3—Intermediate size in action on a crank shaft timing gear. List Price, \$18.00. Dealer's price, \$16.20.

No. 2—Junior size is for light work, magneto generator, etc. List price, \$12.00. Dealer's price, \$10.80.

Write for Ten Day Trial Proposition or Ask Your Jobber

THE GREB COMPANY, Inc.
195 State St., Boston 9, Mass.

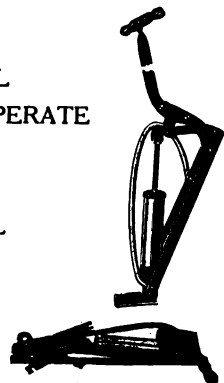
The World's Best Pump

The J. K. Lever Pump

RELIABLE
POWERFUL
EASY TO OPERATE
DURABLE
COMPACT
ALL STEEL
NEAT

List Price
\$5.00

On the Coast
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Patented October 4, 1913, and December 14, 1920. Other Patents Pending

Manufactured by

JENSEN KOHLERT MFG. CO.
ST. CHARLES, ILL.

Please mention The Automobile Trade Directory

PULLERS, Wheel for Fords (Continued)

- Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)
 Easy-Off—See Honn, Peter.
 Efemco—See Foster, Merriam & Co.
 Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)
 Fulton Co., Dept. S., 75th & National Ave., Milwaukee, Wis. (Sole Distributors for Cooper Mfg. Co., Marshalltown, Ave., Milwaukee, Wis. (Distributors.) (See pages 569 to 574.)
 Honn, Peter, 629 Fairview Ave., Grand Rapids, Mich. "Easy-Off."
 Hubco—See Baltimore Hub-Wheel & Mfg. Co.
 Mosco—See Motor Specialties Co.
 Mossberg Co., Frank, Attleboro, Motor Specialties Co., Beaver St., Waltham, Mass. "Mosco."
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Sterling—See Republic Auto Parts Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

PULLEY COVERS, CORK—See Covers, Cork Pulley Rim

PULLEYS, CLUTCH—See Pulleys, Tractor Friction Clutch

PULLEYS, FAN—See Pulleys, Pressed Steel Fan

PULLEYS, FRICTION CLUTCH—See Pulleys, Tractor Friction Clutch

PULLEYS, Pressed Steel Fan

(See also Fans, Radiator)

- Konigsloew Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 Michigan Engine Valve Co., 115-17 Columbia St., W., Detroit, Mich. (See page 919.)
 PULLEYS, SEPARATOR—See Tools, Storage Battery Repair

PULLEYS, Tractor Friction Clutch

- Havana Mfg. Co., 124 N. Pear St., Havana, Ill.
 Herken, Jr.—See Minster Machine Co.
 Hinderer Bros. Co., 20th St. & Wheeling R. R., N. E., Canton, O.
 Laure Friction Clutch Co., Fifth & Market Sts., Watertown, Wis.
 Menasha Clutch Pulley & Machinery Co., Menasha, Wis.
 Minster Machine Co., Minster, O. "Herken, Jr."
 O. K. Clutch & Machinery Co., Columbia, Pa.
 Simple Gas Engine Works, Menasha, Wis.
 Twin Disc Clutch Co., Racine, Wis.

PULLEYS AND SHEAVES—See Sheaves and Pulleys

PUMP CONNECTION WASHERS—See Washers, Tire Pump Connection

PUMP CONNECTIONS—See Connections, Tire Pump

PUMP COUPLINGS—See Couplings, Magneto and Generator

PUMP SHAFTS—See Shafts, Transmission

PUMP SYSTEMS—See Systems, Magnetic Pump Gasoline

PUMP WASHERS—See Washers, Leather

PUMPS, AIR—See Pumps, Engine Driven; also Pumps, Foot; also Compressors, Garage; for Steam Air Pumps—See Pumps, Steam Air

PUMPS, Barrel Emptying

(For emptying oil or gasoline barrels or transferring contents to tanks by air pressure)

- Battle Pump Co., C. S., Mercantile Bldg., Aurora, Ill. "Utility."
 Blackmer Rotary Pump Co., 274 Sheridan St., Petoskey, Mich. (See page 673.)
 Doyle—See Tomahawk Mfg. Co.
 Morgan Co., L. A., 9 Pearl St., Brookline, Mass. "Optimo."
 Optimo—See Morgan Co.
 Runyon Mfg. Co., 447 S. Division St., Grand Rapids, Mich.
 Tomahawk Mfg. Co., 1826 Mannering Road, S. E., Cleveland, O. "Doyle."
 Utility—See Battle Pump Co.

PUMPS, BOILER FEED—See Pumps, Steam Boiler Feed

PUMPS, CIRCULATING—See Pumps, Water Circulating

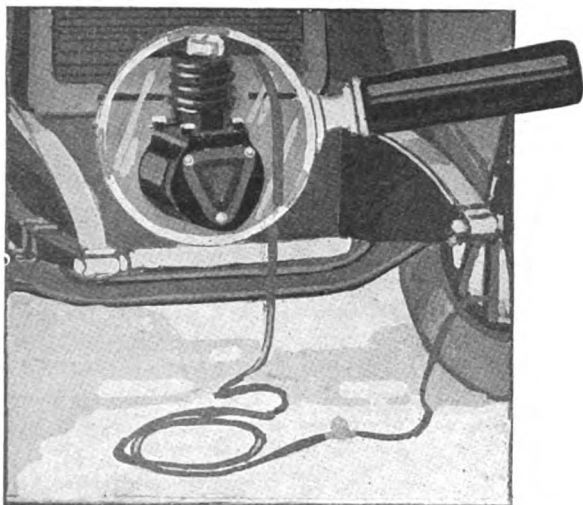
PUMPS, Engine Driven Tire

- Advance Machinery Co., Van Wert, O.
 Allied Steel Products Co., 7 Walnut St., Aurora, Ill.
 Bay State Pump Co., 564 E. First St., (S. Boston), Boston, Mass. "Crane."
 Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
 Crane—See Bay State Pump Co.
 Detroit Accessories Corp., Detroit, Mich. (See page 669.)
 Detroit Carrier & Mfg. Co., Detroit, Mich. (See page 973.)
 General Utility Co., 1326-30 Ogden St., Philadelphia, Pa.
 Hauser Machine & Mfg. Co., 233 Mill St., Rochester, N. Y.
 Hill Pump Valve Co.—See Zinke Co.
 Hilton—See Raymond Engineering Corp.
 Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Juleco."
 Juleco—See Judd & Leland Mfg. Co.
 K S Supply Co., 343 S. Dearborn St., Chicago, Ill.
 Keene Mfg. Co., Keene, N. H.
 Kellogg Mfg. Co., Rochester, N. Y.
 Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
 Longstroke—See Motor Starter & Air Pump Co.

Everything is listed under the NOUN or principal word

DETROIT CRANKSHAFT TIRE PUMP

GEARLESS



Puts the burden of high pressure on front end of the crankshaft where the parts can stand the heavy load. You lock it on just as you would attach your crank and carry it in your tool kit. No rubber diaphragms to burst and give trouble. No heavy load on the water pump or magneto shaft.

CUT SHOWS PUMP INSTALLED ON DODGE CAR
Price \$10.00 NO INSTALLATION COST

THE NEW IMPROVED DAC TWIN CLUTCH PLATE

The first real improvement and new development in automotive clutches since the single plate type was introduced.

It proves *BEST* in comparative tests—*ALL WAYS*.

Soft pedal action—Smooth positive engagement.

Cannot grab, stutter or drag.

Best materials—low price.



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DETROIT ACCESSORIES CORPORATION

DETROIT, MICH.

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PUMPS, Engine Driven Tire (Continued)

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. (See page 251.)
 Motor Starter & Air Pump Co., 52-00 Dickerson St., Newark, N. J. "Long-stroke." (See page 671.)
 Ogden Mfg. Co., Plymouth, Ind.
 Raymond Engineering Corp., 307 Lafayette St., New York, N. Y. "Hilton."
 Risk's Travel Tire Pump Co., Plymouth Bldg., Minneapolis, Minn.
 S-H Pump Co., 2440 W. 34th Pl., Chicago, Ill.
 Spohrer—See Weber Auto Accessory Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)
 Sundstrom Mfg. Co., Shields Ave. at 32d St., Chicago, Ill. "Wizard."
 Trojan—See Troy Foundry & Machine Co.
 Troy Foundry & Machine Co., Troy, N. Y. "Trojan." (See page 671.)
 Utility—See Zinke Co.
 Weber Auto Accessory Co., Sixth Ave., & N. 13th St., Newark, N. J. "Spohrer." (See page 261.)
 Wissler Instrument Works, A., 601 N. Broadway, St. Louis, Mo.
 Wizard—See Sundstrom Mfg. Co.
 York Electric & Machine Co., 30-34 N. Penn St., York, Pa.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 771.)

PUMPS, Engine Driven Tire, for Fords

Advance Machinery Co., Van Wert, O.
 Congress Tool & Die Co., 329 E. Fort St., Detroit, Mich. "G. N. T."
 Danvers Specialty Co., Danvers, Ill.
 G N T—See Congress Tool & Die Co.
 Hill Pump Valve Co.—See Zinke Co.
 Jig-Time—See Partridge, Singer & Baldwin.
 Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Juleco."
 Juleco—See Judd & Leland Mfg. Co.
 Kellogg Mfg. Co., Rochester, N. Y.
 Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. (See page 251.)
 Partridge, Singer & Baldwin, 44 Whitehall St., New York, N. Y. "Jig-Time."
 Rotary Mfg. Co., 400 N. Michigan Ave., Chicago, Ill. "Whirlwind."
 Trojan—See Troy Foundry & Machine Co.
 Troy Foundry & Machine Co., Troy, N. Y. "Trojan." (See page 671.)
 Utility Junior—See Zinke Co.
 Whirlwind—See Rotary Mfg. Co.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility Junior.") (See page 771.)

PUMPS, Foot Tire

Auto Pedal Pump Co.—See Cassidy Co.
 Cassidy Co., Edward A., 230 Madison Ave., New York, N. Y. (Sales Department for Auto Pedal Pump Co., New York, N. Y. "Twombly.")
 Twombly—See Cassidy Co.

PUMPS, GARAGE GASOLINE—See Tanks, Gasoline Storage**PUMPS, GASOLINE FEED—See Systems, Magnetic Pump****PUMPS, GREASE—See Guns, Portable Garage Grease****PUMPS, Hand Tire**

Ace—See Bridgeport Brass Co.
 Aeolus—See Bridgeport Brass Co.
 Albert Lea Sprayer Co., Albert Lea, Minn. "Utility."
 Alert—See Norton, Arthur G.
 American Device Mfg. Co., 4523 Shaw Ave., St. Louis, Mo. "Duo." (See page 675.)
 Anthony Co., 138 West Ave., Long Island City, N. Y.
 Apex Electric Mfg. Co., 1410 W. 59th St., Chicago, Ill. "Yankee." "Liberty."
 Atlas—See Bridgeport Brass Co.
 Autoquip Mfg. Co., Rochester, N. Y. "Twin." "Triumph." "Paramount." "Try It." "Triple Special." "Royal Triple."
 B & S Mfg. Co., 891 Cypress Ave., Brooklyn, N. Y. "X L."
 Baldwin—See Coe-Stapley Mfg. Corp.
 Bell Pump & Mfg. Co., 534 E. Fort St., Detroit, Mich.
 Berch & Joder, 211 Kerr St., Hastings, Neb. "Golden Rod."
 Big Bear—See Foster, Merriam & Co.
 Blickman, S., Nelson Ave. & Mount St., Long Island City, N. Y. "Green Aero."
 Blizzard—See Bridgeport Brass Co.
 Blue Champion—See Robert-Irwin Mfg. Co.
 Blue Devil—See Judd & Leland Mfg. Co.
 Boss—See Cox Brass Mfg. Co.
 Bridgeport Brass Co., Bridgeport, Conn. "Stapley." "Aeolus." "Atlas." "Crown." "Windjammer." "Weeno." "Ace."
 C & S—See Codman & Shurtleff.
 Carver—See Newton Mfg. Co.
 Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. (See pages 607 and 741.)
 Champion, Jr.—See Robert-Irwin Mfg. Co.
 Cleveland Faucet Co., 708 Frankfort Ave., N. W., Cleveland, O.
 Codman & Shurtleff, 120 Boylston St., Boston, Mass. "C & S."
 Coe-Stapley Mfg. Corp., West Haven, Conn. "Rex." "Little Giant." "Baldwin." "Whirlwind." "Longfellow." "Gem." "Okeh." (See page 487.)
 Cox Brass Mfg. Co., Albany, N. Y. "Boss." "Handy." "Reliable." (See page 168.)
 Crescent Mfg. Co., 120 Reade St., New York, N. Y. (See page 673.)
 Crown—See Bridgeport Brass Co.
 Cyclone—See Judd & Leland Mfg. Co.
 Dead Easy—See Globe Mfg. Co.
 Duo—See American Device Mfg. Co.
 Durabilt—See Winsted Hardware Mfg. Co.
 E-M-G—See Gant Mfg. Co.
 Eureka—See Judd & Leland Mfg. Co.
 Excel—See Judd & Leland Mfg. Co.
 E-Z-Quick—See Mayo-Skinner Mfg. Co.
 Factory Sales Co., 120 Broadway, New York, N. Y. "Hilton."
 Fapco—See Force Air Pump Co.
 Force Air Pump Co., 203 S. Oak St., Jefferson, Ia. "Fapco."
 Foster, Merriam & Co., Meriden, Conn. "Big Bear." (See page 711.)
 Freeman Brass Works, 92 Bowery, New York, N. Y.

Everything is listed under the NOUN or principal word



**HERE ARE TWO PUMPS THAT
EVERY CAR OWNER WILL WANT—**

"MILWAUKEE"

(The Million Dollar Pump)
Triple Cylinders.
Steam Pressure Stuffing Boxes.
Steam Engine Packing Boxes—Can't
Leak.
Heavy Brass Barrels.
Heavy Duty.
More Air and Quicker with Less
Work.
Best Spartan Leather Cups.
Solid Brass Base.
Pumps Auto Tire 70 Pounds Pres-
sure in One Minute and to 100
Pounds in Two Minutes.

"HERCULES"

(Single)
Strong Construction.
Best Spartan Leather Cup.
Accurately Machined.
No Complicated Parts.
Heavy Brass Barrel.
Best 5-Fly Hose.
A Big Seller.
Made to Work at All Times and
Under All Conditions.
Pumps to Desired Pressure Quickly.
Dealers and Jobbers—Write today for
details and prices.



ROBERTS BRASS COMPANY
MANUFACTURERS

176-178-180-182 Lincoln Ave.

Milwaukee, Wis.

THE TRUCK TIRE PUMP

That Meets Every Requirement

Designed and built solely for heavy pressure duty

**Rigidly tested and strongly endorsed
by America's largest tire manufacturers**



Will consistently inflate 44x10 inch tires in less than 10 minutes

Not a particle of oil enters the cylinder

Not a particle of oil enters the tires

A marvel of power, strength and speed—Immediate deliveries

Necessary on Every Pneumatic Tired Truck

"Long Stroke"

AIR COMPRESSORS

A quality line supreme. Maximum air delivery. Quick Service.
Less power. Less trouble.

Saves time and money for the user

Wins confidence for the dealer

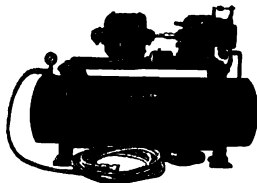
The most compact compressor made. The simplest design

Write for literature and prices, dealer's terms etc.

MOTOR STARTER AND AIR PUMP CO.

52-60 Dickerson Street

NEWARK, N. J.



TROJAN Tire Pumps

Can be installed on
**50 Different Models
of Automobiles**

Engine Driven and Transmission Driven

Write for Catalogue and Prices

TROY FOUNDRY & MACHINE CO., TROY, N.Y.

Please mention The Automobile Trade Directory

PUMPS, Hand Tire (Continued)

Fulton Co., 75th & National Aves., Milwaukee, Wis. (Distributors.)
(See pages 569 to 574.)

Gant Mfg. Co., E. M. Ethridge, Tenn. "B-M-G."

Gem—See Coe-Stapley Mfg. Co.

Generator Valve Co., 47 Dinmore Pl., Brooklyn, N. Y. "James."

Geneva—See Howell Co.

Gleason-Peters Air Pump Co., 384 Classon Ave., Brooklyn, N. Y.

Globe Mfg. Co., 64 Grant St., Battle Creek, Mich. "Dead Easy."

Golden Rod—See Berch & Joder.

Green Aero—See Blickman, S.

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Handy—See Cox Brass Mfg. Co.

Harlem—See Judd & Leland Mfg. Co.

Hart-Bell Co., 48 S. Water St., Poughkeepsie, N. Y.

Hercules—See Roberts Brass Co.

Hilton—See Factory Sales Co.

Hite Mfg. Co., 833-35 Missionary Ave., Chattanooga, Tenn. "S-O-S."

Holstein Mfg. Co., Richland, Pa.
(See page 675.)

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Anthony Pumps.) (See page 179.)

Howell Co., W. H. State & River Sts., Geneva, Ill. "Jensen," "Geneva."

Ideal—See Noera Mfg. Co.

I. X. L.—See Inland Pump Mfg. Co.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. "Wixon."
(See page 173.)

Indianapolis Air Pump Co., 1625 Bellefontaine St., Indianapolis, Ind. "Surestroke."

Inland Pump Mfg. Co., 610-12 Reaper Bldg., Chicago, Ill. "I. X. L."
(See page 673.)

International Aerial Navigation Co., 1034 N. Vandeventer Ave., St. Louis, Mo. "Kippel Bros."

J. K.—See Jensen Kohler Mfg. Co.

James—See Generator Valve Co.

Jensen—See Howell Co.

Jensen Kohler Mfg. Co., St. Charles, Ill. "J. K." (See page 667.)

Judd & Leland Mfg. Co., Clifton Springs, N. Y. "Eureka," "Tornado," "Cyclone," "Victor," "Excel," "Harlem," "Little Taylor."

Kellogg Mfg. Co., Rochester, N. Y.

Kentucky Tire Pump Co., 190 N. State St., Chicago, Ill.

Kippel Bros.—See International Aerial Navigation Co.

Liberty—See Apex Electric Mfg. Co.

Liberty—See Reece-Hilton, Inc.

Little Giant—See Coe-Stapley Mfg. Co.

Little Taylor—See Judd & Leland Mfg. Co.

Longfellow—See Coe-Stapley Mfg. Co.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. "E-Z-Quick."
(See page 251.)

Milwaukee—See Roberts Brass Co.

Monroe Automotive Equipment Mfg. Co., Monroe, Mich. (See page 571.)

Moon Bros. Mfg. Co., 4900 McKlassock Ave., St. Louis, Mo.

Morgan Mfg. Co., Court St., Keene, N. H.
(See page 675.)

Myers Auto Pump Co., 61 Washington St., Paterson, N. J.

National Service Mfg. Co.—See Pivot Sales Corp.

Newton Mfg. Co., Plainville, Conn. "Carrier." (See page 315.)

No. 99—See Stevens & Co.

Noera Mfg. Co., 21-27 Griggs St., Waterbury, Conn. "Red Devil," "Ideal," "Waterbury."

Norton, Arthur G., 14 Commercial St., Rochester, N. Y. "Alert."

Okeh—See Coe-Stapley Mfg. Corp.

Paramount—See Autoquip Mfg. Co.

Perfect—See Pratt Mfg. Co.

Perkins Marine Lamp Corp., 1943 Pitkin Ave., Brooklyn, N. Y. "Perko."

Perko—See Perkins Marine Lamp Corp.

Petry Co., N. A., 328-34 N. Randolph St., Philadelphia, Pa.

Pivot Sales Corp., 608 Chestnut St., Philadelphia, Pa. (Sole Distributors for National Service Mfg. Co., Philadelphia, Pa.)

Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill. "Perfect," "Standard."

Red Devil—See Noera Mfg. Co.

Red Wonder—See Sidel-Rattner Mfg. Co.

Reece-Hilton, Inc., Troy, N. Y. "Liberty."
(See page 667.)

Reliable—See Cox Brass Mfg. Co.

Rex—See Coe-Stapley Mfg. Co.

Robert-Irwin Mfg. Co., 427-31 W. Broadway, New York, N. Y. "Blue Champion," "Champion Jr."

Roberts Brass Co., 176-82 Lincoln Ave., Milwaukee, Wis. "Hercules," "Milwaukee." (See page 671.)

Rose Mfg. Co., Frank, Hastings, Neb.
(See page 675.)

Royal-Triple—See Autoquip Mfg. Co.

S-O-S—See Hite Mfg. Co.

Shawver Co., rear 21 W. Pleasant St., Springfield, O. "Springfield."

Sidel-Rattner Mfg. Co., Bush Terminal, Brooklyn, N. Y. "Red Wonder."

Springfield—See Shawver Co.

Standard—See Pratt Mfg. Co.

Stapley—See Bridgeport Brass Co.

Stevens, C. S., 680 W. Main St., New Britain, Conn.

Stevens & Co., 375 Broadway, New York, N. Y. "No. 99." (See page 197.)

Sunderland Co., Warsaw, Ind.
(See page 673.)

Surestroke—See Indianapolis Air Pump Co.

Tornado—See Judd & Leland Mfg. Co.

Triple Special—See Autoquip Mfg. Co.

Triumph—See Autoquip Mfg. Co.

Try-It—See Autoquip Mfg. Co.

Turner Brass Works, Sycamore, Ill.

Twin—See Autoquip Mfg. Co.

Utility—See Albert Lea Sprayer Co.

Victor—See Judd & Leland Mfg. Co.

Waterbury—See Noera Mfg. Co.

Wayne Engineering Co., 1400 Broadway, New York, N. Y. "Wenco."

Wenco—See Bridgeport Brass Co.

Wenco—See Wayne Engineering Co.

Whirlwind—See Coe-Stapley Mfg. Corp.

Windjammer—See Bridgeport Brass Co.

Winsted Hardware Mfg. Co., Winsted, Conn. "Durabilt."

Wixon—See Imperial Brass Mfg. Co.

X L—See B & S Mfg. Co.

Yankee—See Apex Electric Mfg. Co.

PUMPS, OIL—See Lubricators

PUMPS, OIL FILLER—See Tanks and Systems, Oil

PUMPS, POWER TIRE—See Pumps, Engine Driven; also Pumps, Garage

PUMPS, Steam Air
(For keeping air pressure on fuel tanks of steam cars)

Cameron Steam Pump Works, A. S., 11 Broadway, New York, N. Y.

Union Steam Pump Co., Jefferson & Madison Sts., Battle Creek, Mich.

Everything is listed under the NOUN or principal word

No. 1 Pump No. 2 Pump No. 3 Pump No. 10 Pump No. 100 Pump Sunderland Special Pump No. 1 Grease Gun

A Complete Line of Tire Pumps and Grease Guns

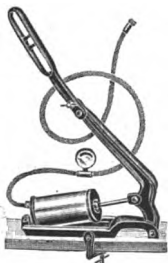
THE SUNDERLAND COMPANY, Warsaw, Indiana

INLAND RUNNING BOARD TIRE PUMP

100% EFFICIENT 4 REASONS

- 1—The cylinder is a leak-proof drawn steel shell.
 - 2—No air can pass the plunger.
 - 3—Plunger strikes bottom of cylinder expelling all air with each piston stroke.
 - 4—Positive check valve.
- Leverage, 18 to 1.

WORLD'S EASIEST TIRE PUMP



Patent folding handle and clamp—no loose parts—compact. Fully guaranteed Liberal discount to the trade.

List price
\$5.50

With Gauge
\$6.50

INLAND PUMP MFG. CO.
Office: 610 Reaper Block, CHICAGO

PUMPS

Thousands of Blackmers are serving every branch of the automobile industry from the largest factories to private garages. They handle all liquids from gasoline to transmission oil. They are built in a large variety of sizes for either hand or power operation. The best gasoline dispensers are equipped with Blackmers.

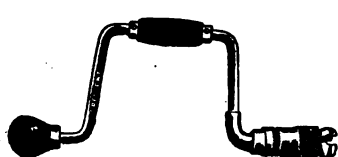
Ask for catalog



Blackmer Rotary Pump Company
274 Sheridan St., Petoskey, Mich.

Crescent Manufacturing Company

Manufacturers of an extensive line of
Automobile Accessories and Tool Kits.



Will Send Catalogue Upon Request

CRESCENT MFG. CO., 129 Reade St., N. Y., U. S. A.

Please mention The Automobile Trade Directory

PUMPS, Steam Boiler Feed*(For feeding boilers of steam cars)*

American Steam Pump Co., Maple St., Battle Creek, Mich. "Marsh."
 Cameron Steam Pump Works, A. S., 11 Broadway, New York, N. Y.
 Marsh—See American Steam Pump Co.
 Union Steam Pump Co., Jefferson & Madison Sts., Battle Creek, Mich.

PUMPS, TIRE—See Pumps, Engine Driven; also Pumps, Foot; also Pumps, Hand; also Compressors, Garage

PUMPS, Tractor Water Circulating

Aro—See Arrow Pump Co.
 Arrow Pump Co., Buhl Bldg., Detroit, Mich. "Aro."
 Atlas Brass Foundry Co., Columbus, O. (See page 551.)
 Cramer Mfg. Co., 387-89 Tenth St., Milwaukee, Wis.
 Fulfo Pump Co., 126 Opera Pl., Blanchester, O.
 Halvorsen—See U. S. Products Corp.
 Lobee Pump & Machinery Co., 133 Bridge St., Buffalo, N. Y.
 Michigan Machine Co., 951 Porter St., Detroit, Mich. "Rollway."
 Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
 Peru Brass & Mfg. Co., Peru, Ind.
 Rollway—See Michigan Machine Co.
 U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."
 Universal Engineering & Mfg. Co., 1110 S. Michigan Ave., Chicago, Ill.

PUMPS, Water Circulating

Aro—See Arrow Pump Co.
 Arrow Pump Co., Buhl Bldg., Detroit, Mich. "Aro."
 Atlas Brass Foundry Co., Columbus, O. (See page 551.)
 Blackmer Rotary Pump Co., 274 Sheridan St., Petoskey, Mich. (See page 673.)
 Cluley Auto Supplies Co., 471 E. Ohio St., Chicago, Ill. "Gusher."
 Cramer Mfg. Co., 387-89 Tenth St., Milwaukee, Wis.
 Doehler Die-Casting Co., Brooklyn, N. Y. (See page 211.)
 Fulfo Pump Co., 126 Opera Pl., Blanchester, O.
 Gusher—See Cluley Auto Supplies Co.
 Halvorsen—See U. S. Products Corp.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.
 Lobee Pump & Machinery Co., 133 Bridge St., Buffalo, N. Y.
 Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.
 Oberdorfer Brass Co., M. L., 804 E. Water St., Syracuse, N. Y.
 U. S. Products Corp., 220 S. Michigan Ave., Chicago, Ill. "Halvorsen."
 Universal Engineering & Mfg. Co., 1110 S. Michigan Ave., Chicago, Ill.
 Westco—See Western Pump Co.
 Western Pump Co., 428 Third St., Davenport, Ia. "Nestco."

PUMPS, Water Circulating, for Fords*(Auxiliary water circulators)*

Atlas Brass Foundry Co., Columbus, O. (See page 551.)
 Blue Diamond Oil Burner Corp., 1434 E. Falls St., Niagara Falls, N. Y. "Niagara."

Butler—See Riverside Specialty Works.
 Cataract Mfg. Co., 262 Fifth St., Milwaukee, Wis.

Cramer Mfg. Co.—See Jonas, C. N. & F. W.
 Cyclone—See Holland Brass Works.
 Felker Bros. Mfg. Co., Marshfield, Wis. "Perfection."
 General Metals Co., 6189 Greenwood Ave., Detroit, Mich. "Serkulator."
 Holland Brass Works, 1110 S. Michigan Ave., Chicago, Ill. "Cyclone."
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Cramer Mfg. Co., Milwaukee, Wis. "Milwaukee.") (See page 137.)

Little Wonder—See Riverside Specialty Co.
 Lobee Pump & Machinery Co., 133 Bridge St., Buffalo, N. Y.
 McDonald-Klein Distributing Co., 1604 Main St., Buffalo, N. Y. "M & K."
 M & K—See McDonald-Klein Distributing Co.
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 Milwaukee—See Jonas, C. N. & F. W.
 Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.
 Niagara—See Blue Diamond Oil Burner Corp.
 Ospeco—See Michigan Auto Products Co.
 Perfection—See Felker Bros. Mfg. Co.
 Perry Auto Co., 309 Seventh St., Pittsburgh, Pa. "Security."

Peru Brass & Mfg. Co., Peru, Ind.
 Riverside Specialty Co., Riverside, Cal. "Little Wonder," "Butler."
 Security—See Perry Auto Co.
 Serkulater—See General Metals Co.
 Schilling Mfg. Co., 928-30 Pacific Ave., Long Beach, Cal. "Vanreush."
 Standard Auto Accessories Co., 127 S. Green St., Chicago, Ill.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 759.)
 U. S. Products Corp., 1011 Holmes St., Kansas City, Mo.
 Universal Engineering & Mfg. Co., Chicago, Ill.

Vanreush—See Schilling Mfg. Co.
 Westco—See Western Pump Co.
 Western Pump Co., 428 Third St., Davenport, Ia. "Westco."

PUMPS AND AIR COMPRESSORS, GARAGE—See Compressors, Garage Air**PUNCHES, Arch and Washer**

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Kraenter & Co., Newark, N. J. (See page 643.)

PUNCHES, Center, Prick and Drift

Acme Engineering & Mfg. Co., 355 Union Park Ave., Chicago, Ill.
 Beall Bros., Fourth St., Alton, Ill.
 Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Brown & Sharpe Mfg. Co., Promenade St., Providence, R. I.
 Buffum Tool Co., Louisiana, Mo. (See page 583.)
 Carver Tool Works, Spring Valley, N. Y.
 Cincinnati Tool Co., Main Ave., Norwood, O. "Hargrave."
 Easy Hold—See West Haven Mfg. Co.
 Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Everything is listed under the NOUN or principal word

"American Junior" Tire Pump THE WONDER PUMP

The American "Junior" Pump will give you quick turnovers, "large profits," satisfied customers. Note the specifications, then write or wire.

Height over all, 21 inches.

Barrel, 1 1/4 inches.

Solid Brass, Satin Finish (will not rust).

Malleable Cast Base (will not break).

Cloth Covered Hose (will not crack).

Schrader Connections.

Handle Hardwood Natural Finish (will not come off).

Automatic Valve in Base (cannot be tampered with).



LIST PRICE

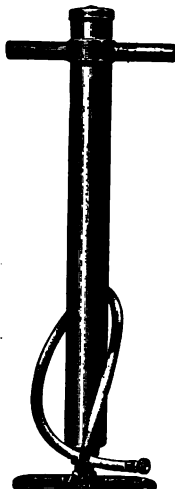
\$4.00

The discount to both Jobber and Dealer is greater on this wonderful Pump than any other Tire Pump on the market.

Let us send you one. Look it over. Compare our Price and Product. Don't hesitate.

American Device Manufacturing Co.
4523 SHAW AVENUE, ST. LOUIS, MO.

DEALERS



Use this pump yourself for thirty days. Then, when you are convinced that it is the best pump on the market, sell it to your trade. There are big profits in it for you.

If you are not completely satisfied, return the pump to us. We will refund your money and pay the express charges both ways.

We know that this double-acting, powerful pump is sure to give entire satisfaction—that is why we make this unusual offer.

GARAGE MEN. Try this pump for thirty days. It will take the place of an air compressor.

Retail Price,
\$6.00

Not an Ought to Pump.
A Real Auto Tire Pump.

HOLSTEIN MFG. CO.
Richland, Lebanon Co. - - Pa.

The MORGAN RED PUMP

Will inflate tires in practically half the time an ordinary pump requires. Barrel of cold drawn steel—easily renewable leather on piston — 5-ply Goodrich hose. Exclusive foot strap feature allows pump to be used either at angle or vertically. Finished in red enamel. Packed in lots of 25.

22 inch **\$450**

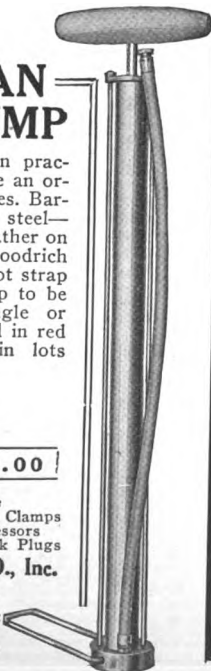
18 - Inch \$4.00

Other Products

Valve Lifters Hose Clamps
Piston Ring Compressors
Ball Joints Spark Plugs

MORGAN MFG. CO., Inc.

Court Street KEENE, N. H.



"To please your trade
sell Morgan-made"

ROSE TIRE PUMP

The most widely used and the best advertised tire pump. Nearly 3,000,000 in use. Popular the world over because its "patent valve" made tire pumping EASY. Dealers prefer to handle the Rose Pump because it sells so well and gives such complete satisfaction. Two sizes.



GREASE GUNS

Like the Rose Tire Pump, they lead their line. Their "taper nozzle" fixes that. Three sizes, to suit every need. Rose Fil-A-Gun Grease Buckets, Barrel Drainers and Barrel Grease Pumps are equally popular.

INVESTIGATE!

The Rose line offers you quick, easy sales with good profits. Their popularity assures it. Get our attractive proposition to jobbers and dealers. Write us or your jobber today for complete information.

Frank Rose Mfg. Co., Hastings, Nebr.



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**PUNCHES, Center, Prick and Drift
(Continued)**

Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.
 Goodell-Pratt Co., Greenfield, Mass.
 Hargrave—See Cincinnati Tool Co.
 Harold Tool & Forge Co.—See Wiebusch & Hilger.
 Kortick Mfg. Co., 345 First St., San Francisco, Cal.
 Kraeuter & Co., Newark, N. J.
 (See page 643.)
 Marcy Tool Works, Putnam, Conn.
 Mayhew Steel Products, 291 Broadway, New York, N. Y.
 Milwaukee Tool & Forge Co., 220 Becher St., Milwaukee, Wis.
 O. K.—See West Haven Mfg. Co.
 Peck, Stow & Wilcox Co., Southington, Conn.
 "Pexto."
 Pexto—See Peck, Stow & Wilcox Co.
 Red Devil—See Smith & Hemenway.
 S. & I. Co., 55-57 Governor St., Springfield, Mass.
 Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."
 Starrett Co., L. S., Athol, Mass.
 Storfs & Son, John, 210-12 Vine St., Philadelphia, Pa.
 Syracuse Twist Drill Co., 936 Grape St., Syracuse, N. Y.
 Tuck Mfg. Co., 74 Ames St., Brockton, Mass.
 Union Tool Co., 48 E. River St., Orange, Mass.
 V. & B.—See Vaughan & Bushnell Mfg. Co.
 Vaughan & Bushnell Mfg. Co., 2114-38 Carroll Ave., Chicago, Ill. "V. & B."
 Vichek Tool Co., 3000 E. 87th St., Cleveland, O.
 West Haven Mfg. Co., 22 Elm St., (W. Haven) New Haven, Conn. "O. K." "Easy Hold."
 Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harold Tool & Forge Co., Columbiana, O.)

PUNCHES, DEALERS IN—See Machinery, Dealers in

PUNCHES, DRIFT—See Punches, Center, Prick and Drift

PUNCHES, HAND—See Punches, Portable Hand

PUNCHES, Portable Hand

Armstrong-Blum Mfg. Co., 333 N. Francisco Ave., Chicago, Ill. "Marvel."
 Bicknell Mfg. & Supply Co., 23 N. Academy St., Janesville, Wis.
 Buffalo Forge Co., 490 Broadway, Buffalo, N. Y.
 Clough, R. M., 327 Colony St., Tolland, Conn.
 Excelstor Tool & Machine Co., 31st St. & Ridge Ave., East St. Louis, Ill. "Little Giant."
 Jiffy—See Koch & Co.
 Kidder Mfg. Co., J. F., Burlington, Vt.
 Koch & Co., Paul W., 21 S. Wells St., Chicago, Ill. "Jiffy."
 Little Giant—See Excelstor Tool & Machine Co.
 Little Giant Punch & Shear Co., 218 S. Market St., Sparta, Ill.
 Marvel—See Armstrong-Blum Mfg. Co.
 Parker Supply Co., 785 E. 185th St., New York, N. Y.

PUNCHES, PRICK—See Punches, Center Prick and Drift

PUNCHES, WASHER—See Punches, Arch and Washer

PUNCTURE SEALING COMPOUNDS—See Compounds, Puncture Sealing

PURIFIERS, Acetylene Gas

(For insertion in pipe line between generator and lamp to remove impurities from the gas and prevent flickering of lights)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 471.)

PURIFIERS, GASOLINE—See Strainers or Separators, Gasoline

PURIFIERS, Oil

De Laval Separator Co., 155 Broadway, New York, N. Y.

PUSH BUTTON SWITCHES—See Switches, Light

PUSH BUTTONS—See Buttons, Push

PUSH ROD SILENCERS, OVERHEAD VALVE—See Silencers, Overhead Valve

PUSH RODS—See Rods, Adjustable Valve Lift

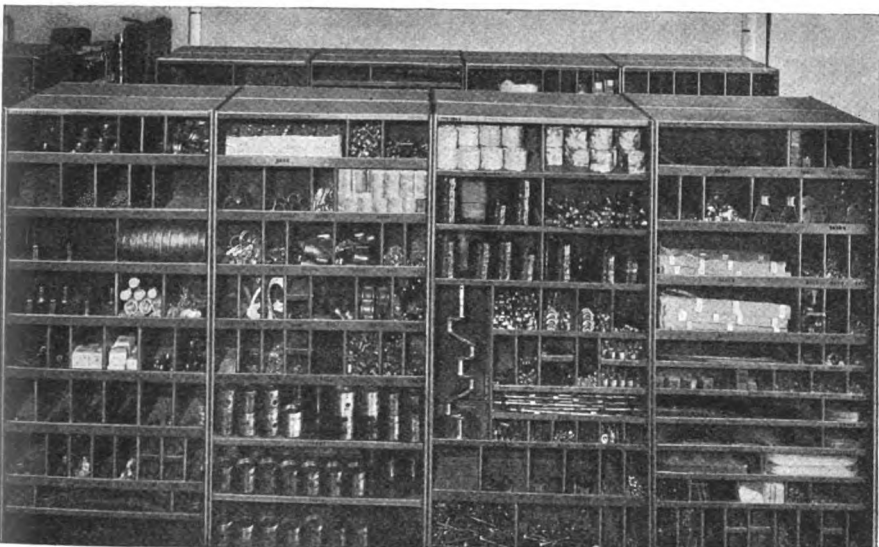
PUTTY, RUBBER—See Compounds, Tire Repair

PUTTY, TIRE—See Compounds, Tire Repair

PYROMETERS

American Steam Gauge & Valve Mfg. Co., 208-20 Camden St., Boston, Mass.
 Brown Instrument Co., Wayne Junction, Philadelphia, Pa.
 Du Vivier, Ernest H., 30 Church St., New York, N. Y. (Importer.)
 Englehard, Charles, 30 Church St., New York, N. Y.
 Esterline-Angus Co., 227 E. South St., Indianapolis, Ind.
 Hanovia Chemical & Mfg. Co., 232-39 N. J. Railroad Ave., Newark, N. J.
 Hoskins Mfg. Co., 4435 Lawton Ave., Detroit, Mich.
 Leeds & Northrup Co., 4919 Stenton Ave., Philadelphia, Pa.
 Monopivot—See Wilson-Maeulen Co.
 Pyods—See Wilson-Maeulen Co.
 Pyroscope—See Shore Instrument & Mfg. Co.
 Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.
 Schaeffer & Budenberg Mfg. Co., 338 Berry St., Brooklyn, N. Y.
 Shore Instrument & Mfg. Co., 9025-29 Van Wyck Ave., New York, N. Y. "Pyroscope."
 Stupakoff Laboratories, Fifth & Hamilton Aves., Pittsburgh, Pa.
 Tapalog—See Wilson-Maeulen Co.
 Taylor Instrument Co., 95 Ames St., Rochester, N. Y. "Tycoas."

Everything is listed under the NOUN or principal word



Part of 31-Unit Special System for Fords

STOCK THEM IN

AUTO PARTS **Lupton** STORAGE

INVESTMENT VALUE

and find any part instantly!

All parts grouped by unit assemblies, in exact or approximate Parts Book sequence. Quantities proportioned to average monthly demand.

Saves time for stock clerks, shop men

and customers. Holds more stock per foot of floor space. Displays the stock and advertises your service. Pays for itself in a few months in time and added sales.

Made of STEEL in units 3 x 7 x 1 ft. Shipped completely assembled and crated: NO ERECTION necessary. Fits any stock-room. All shelves and partitions easily adjustable. Finished in olive green baked enamel.

Sold in complete Systems for large and small stocks of Buick, Chalmers, Chevrolet, Dodge, Dort, Essex, Ford (special), Hudson, Hupmobile, Maxwell, Oakland Six, Oldsmobile, Overland, Studebaker and Willys-Knight. Also in separate Basic Units, by combining which other systems can be made. Units may be bought separately for overflow and obsolete stock, hardware, accessories, etc.

Sold everywhere by leading jobbers, and by all Lupton branches. A wonderful investment for the price!

When writing, give names of cars handled and approximate value of parts stock carried for each.

DAVID LUPTON'S SONS COMPANY

Allegheny Avenue and Tulip Street, Philadelphia

Cleveland	New York	Chicago
806 Sweetland Building	50 Church Street	1114 Steger Building

Makers also of Lupton Standard Steel Shelving and Factory Equipment

(Bench Legs, Bench Drawers, Tool Stands and Cabinets, Waste Bins, Etc.)



One of 11 Basic Units
Used in Systems or
Separately

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PYROMETERS (Continued)

Thwing Instrument Co., 2239 Lancaster Ave., W., Philadelphia, Pa. "Twinko."
 Twinko—See Thwing Instrument Co.
 Tycoo—See Taylor Instrument Cos.
 Wilson-Maeulen Co., 730 E. 143d St., New York, N. Y. "Pyoda," "Tapalog," "Mono-pivot."
 Zaubitz, August, 97 Cliff St., New York, N. Y.

QUICK DETACHABLE RIMS—See Rims, Quick Detachable

QUICK DETACHABLE STEERING WHEEL RINGS, TRACTOR—See Rings, Tractor Quick Detachable Steering

QUICK STOP TRACTOR HITCHES, AUTOMATIC—See Hitches, Automatic Quick Stop Tractor

RACES, BALL—See Cups, Ball

RACKS, BODY HANDLING—See Trucks, Body Handling

RACKS, ELECTRICAL TESTING—See Instruments, Electrical Circuit Testing

RACKS, ENGINE REPAIR—See Stands, Engine Repair

RACKS, Hat

(Ord hat racks or holders for use in closed cars; see also Hangers, Hat)

Bridgeport Coach Lace Co., 813 Wood Ave., Bridgeport, Conn. (See page 305.)
 Columbia—See Hortsmann Co.
 Hortsmann Co., Wm. H., Fifth & Cherry Sts., Philadelphia, Pa. "Columbia."
 Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.

RACKS, LUGGAGE, FOR FORDS—See Racks, Trunk

RACKS, Metal Tool, Stock and Tire

Advance Engineering Co., 6539 Metta Ave., Cleveland, O.
 All-Steel-Equipt Co., 150 John St., Aurora, Ill.
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Berloy—See Berger Mfg. Co.
 Berger Mfg. Co., 1038 Belden Ave. N. E., Canton, O. "Berloy."
 Bracegirdle, H. V., 1777 Broadway, New York, N. Y. "Mankey."
 Carl's Sons, Chas. W., Coles St., Trenton, N. J.
 Champion—See Western Tool & Mfg. Co.
 Cleveland Wire Spring Co., 1281 E. 38th St., Cleveland, O.
 Crackerjac—See Reed Mfg. Co.
 Cyclone Fence Co., Waukegan, Ill.
 Darby & Sons Co., Edward, 412 N. 18th St., Philadelphia, Pa. "Pen Dar."
 Dexter Metal Mfg. Co., Front & Arch Sts., Camden, N. J.
 Dow Co., Franklin, Buchanan & Pochontas Sts., Louisville, Ky. (See page 157.)

Durand Steel Locker Co., 1599 Ft. Dearborn Bank Bldg., Chicago, Ill. (See page 679.)
 Elgin Motor Power Mfg. Co., 416 Third Ave., Cedar Rapids, Iowa.
 Empire Art Metal Co., College Point, N. Y.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Servistock System Corp., Detroit, Mich.) (See pages 491 to 494.)
 Federal Steel Fixture Co., 4545 W. Homer St., Chicago, Ill.
 Foster Bros. Mfg. Co., Utica, N. Y. (See page 311.)
 Gemco Mfg. Co., 686 S. Pierce St., Milwaukee, Wis. (See page 167.)
 Hetts Co., Dime Bank Bldg., Detroit, Mich.
 Jeffries Co., R. W., 11th & Linden Sts., Camden, N. J.
 Jifty—See Welton Mfg. Co.
 Kund & Elben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa.
 Lupton's Sons Co., David, Allegheny Ave. & Tulip St., Philadelphia, Pa. (See page 677.)
 Lyon Metallic Mfg. Co., (Montgomery), Aurora, Ill.
 M. & M. Co., 500 Prospect St., Cleveland, O.
 Mankey—See Bracegirdle, H. V.
 Manufacturing, Equipment & Engineering Co., Framingham, Mass. "Meeco."
 Meeco—See Manufacturing, Equipment & Engineering Co.
 Multi-Unit—See National Scale Co.
 National Scale Co., 9 Montgomery St., Chicopee Falls, Mass. "Multi-Unit."
 New Britain Machine Co., Chestnut St., New Britain, Conn.
 Nichol-Straight Foundry Co., 323 W. Austin Ave., Chicago, Ill.
 Ohio Mfg. Co., State & Sanford Sts., Painesville, O.
 Pen-Dar—See Darby & Sons Co.
 Perfection Garage Equipment Co., Hagerstown, Md.
 Red Seal Mfg. Co., Cedar Rapids, Ia.
 Reed Mfg. Co., Even L., Sterling, Ill. "Crackerjac."
 Security—See Smith Co.
 Shults & Co., H. H., 24 Commercial St., Gowanda, N. Y.
 Smith Co., W. J., Hagerstown, Md. "Security."
 Street Gate & Mfg. Co., 118 E. Ryder St., Litchfield, Ill.
 Terrell's Equipment Co., Hall & Hilton Sts., Grand Rapids, Mich.
 Van Dorn Iron Works Co., 2685 E. 79th St., Cleveland, O.
 Wallace Supplies Mfg. Co., 420 Orleans St., Chicago, Ill.
 Welton Mfg. Co., Majestic Bldg., Detroit, Mich. "Jifty."
 Western Tool & Mfg. Co., Springfield, O. "Champion."

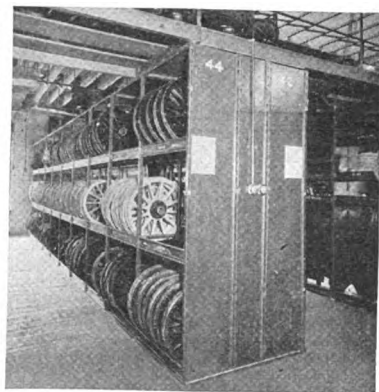
RACKS, ROBE—See Rails, Robe
RACKS, STOCK—See Racks, Metal Tool
RACKS, TIRE—See Racks, Metal Tool
RACKS, TOOL—See Racks, Metal Tool

RACKS, Trunk
 Reese Machine & Tool Works, S., 224-30 W. Main St., Plymouth, Pa.
 Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal.
 Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)

Everything is listed under the NOUN or principal word

DURAND STEEL RACKS

DURAND Steel Racks are instantly adaptable to any storage need. By the use of steel dividers, and steel bin fronts, or Durand Steel Boxes, the most minute parts may be kept safely. On the other hand, fenders, tires, wheels, gears, and the like, may be stored compactly and conveniently.



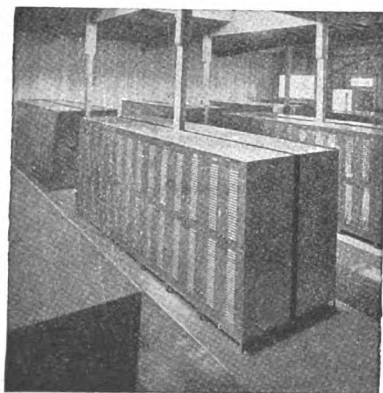
The flexibility of arrangement of Durand Steel Racks makes it possible to group component parts for greatest convenience. Durand Steel Racks save floor space, save unnecessary steps, speed up service, and reduce inventory labor. They are fireproof, easily taken down, moved and re-erected, and constitute a permanent asset on your books.

Durand Steel Lockers are the product of long specialization and experience, and are unsurpassed in simplicity and strength. Having few projecting parts, they are easily kept clean. Locks, doors, hinges, etc., are accurately made and smooth-working.

Write for catalogue of Steel Lockers or Steel Racks. Our Engineering Department will gladly help you with plans.

DURAND STEEL LOCKER CO.

1599 Fort Dearborn Bank Building, Chicago
599 Park Row Building, New York City



DURAND STEEL LOCKERS

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RACKS, TRUNK, and LUGGAGE CARRIERS, for Fords

Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
 Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Elmberg Co., E. F., Railroad St., Parkersburg, Ia. "Elmco."
 Elmco—See Elmberg Co.
 Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Sterling—See Republic Auto Parts Co.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 471.)

RADIAL DRILLS—See Drills, Radial

RADIATOR CAP LOCKS—See Locks, Radiator Cap and Thermometer

RADIATOR CAPS—See Caps, Brass Radiator; also Caps, Rubber Radiator

RADIATOR CAPS FOR FORDS—See Caps, Radiator

RADIATOR CLEANING COMPOUNDS—See Compounds, Radiator Cleaning

RADIATOR CONDENSERS—See Condensers, Radiator

RADIATOR CONNECTIONS—See Hoses, Radiator

RADIATOR COVERS—See Covers, Radiator; also Shutters, Automatic Radiator; also Shutters, Metal Radiator

RADIATOR CRADLES FOR FORDS—See Cradles, Radiator

RADIATOR DISCS—See Discs, Radiator

RADIATOR FANS—See Fans, Radiator

RADIATOR FENDERS—See Fenders or Guards, Truck Radiator

RADIATOR FIN STRAIGHTENING TOOLS FOR FORDS—See Tools, Radiator Fin Straightening

RADIATOR GAGES—See Gages, Radiator

RADIATOR GUARDS—See Fenders or Guards, Truck Radiator

RADIATOR HEATERS—See Heaters, Radiator

RADIATOR HOODS FOR FORDS—See Hoods, Radiator

RADIATOR HOSE—See Hoses, Radiator

RADIATOR LACING—See Lacing, Fabric Radiator; also Leather, Rawhide Lace

RADIATOR MONOGRAMS—See Monograms, Ornamental

RADIATOR ORNAMENTS—See Ornaments, Radiator; also Flags; also Holders, Flag; also Monograms, Ornamental

RADIATOR PANS FOR FORDS—See Pans, Radiator Splash

RADIATOR REPAIR CEMENT—See Cement, Radiator Repair

RADIATOR REPAIR STANDS—See Stands, Radiator Repair

RADIATOR SEALING COMPOUNDS—See Cement, Radiator Repair

RADIATOR SHIELDS—See Shutters, Radiator

RADIATOR SHUTTERS—See Shutters, Automatic Radiator; also Shutters, Metal Radiator

RADIATOR SIGNS—See Monograms, Ornamental Metal

RADIATOR STRAINERS—See Strainers, Radiator and Tank Filler

RADIATOR TEMPERATURE CONTROLLERS FOR FORDS—See Covers, Automatic Radiator

RADIATOR TESTING PLUGS FOR FORDS—See Plugs, Radiator Testing

RADIATOR THERMOMETER LOCKS—See Locks, Radiator Cap and Thermometer

RADIATOR THERMOMETERS—See Meters, Water Temperature Indicating

RADIATORS, DUMMY, FOR FORDS—See Hoods, Radiator

RADIATORS, Tractor Water Cooling

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection."
 Atlantic Auto Radiator Co., 1363-65 Ridge Ave., Philadelphia, Pa.

Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Zig-Zag."
 Bowerbank Expansion Radiator Co., 1012-14 S. Los Angeles St., Los Angeles, Cal.

Bremer Mfg. Co., 850 S. Canal St., Chicago, Ill.

Bush Mfg. Co., Hartford, Conn.
 (See page 683.)

Candler Radiator Co., 1084-48 Jefferson Ave., E., Detroit, Mich. (See page 687.)

Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.

Curran-Detroit Radiator Co., 1984 W. Lafayette Blvd., Detroit, Mich.
 (See page 687.)

English & Mersick Co., New Haven, Conn.
 (See page 530.)

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for McCord Radiators.)
 (See page 113.)

Faber, Schneider Mfg. Co., 2317-27 S. Wabash Ave., Chicago, Ill.

Fedders Mfg. Co., Buffalo, N. Y.
 (See page 691.)

Flexo Mfg. Co., 1312-20 E. 12th St., Los Angeles, Cal.

G & O Mfg. Co., New Haven, Conn.
 (See page 682.)

Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y.

Everything is listed under the NOUN or principal word



Radiator Requirements

Different uses made of automotive vehicles call for different types of radiators.

With that thought in mind we produce the National Cellular type radiator for special use on Ford trucks and delivery cars.

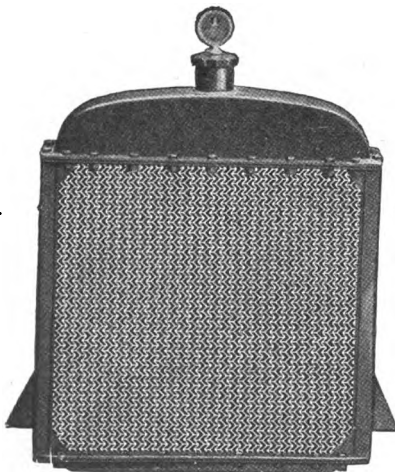
It is built along standard truck

radiator lines plus—strength in all its parts. Just note the zig zag cores, bolted both top and bottom and the excessive strength of the Brass tanks.

It will pay you to equip your Ford truck with one of these radiators. They wear longer and give better service.

Price

Price of Radiator
Forty Dollars, F
O. B. Detroit.
Write us for full
details of this new
cellular type ra-
diator.



NATIONAL CELLULAR TYPE

Dealers

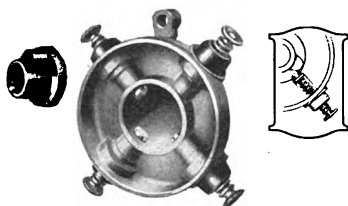
This is just the
type of radiator
that Ford truck
owners have been
asking for. Write
us to explain our
attractive propo-
sition.

NATIONAL CAN COMPANY

Radiator Division

Detroit, Michigan, U. S. A.

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**FORD GENIUS AND HERZ GENIUS COMBINED**

Fifteen years' development by the great Electrician Herz. Result: The remarkable new Hammerblow Timer for Fords.

We made the first Bulck and Stevens-Duryea Timers fifteen years ago. We invented the word "Timer." We were first. We are still first.

Now we have the correct scientific principle for Fords. No unreliable brushes. No wearing arcing and smearing roller assemblies, but simplicity itself. A hardened steel cam and four tool steel follower plungers assembled in a manganese bronze housing.

The steel cam releases the follower plungers on the trigger principle. The effect on the vibrators is like a hammerblow. They never stick. Never any sluggish after current. Exact timing at all speeds.

Herz genius gives you a wonderfully elastic Ford, clocky regular ignition, instantaneous starting, smooth, slow killing and 20% gas saving if your present Timer is wearing out and behaving badly.

Our Timer will last as long as the motor, guaranteed against any replacement for two years. Low introductory price, only \$5.00. Packed in a strong wooden box.

HERZ

Maker of the Famous Herz Bluestone Plug
182 Locust Ave., NEW YORK CITY, N. Y.

Thousands of these Herz Hammerblow Timers have been sold. National advertising plans and unusual sales policies and profits are now being arranged. Substantial jobbers and dealers should connect with us at once.



PERFEX

THE PERFECT RADIATOR

Because the Perfex Ford Radiator is made of heavy .005 bronze and has patented spring suspension, it withstands heating, freezing, lime and alkaline water and the weaving and spreading of the Ford frame. No other Ford replacement radiator will outlast or outcool it. Full details on request. Write today for interesting Dealer Proposition.

Perfex Radiator Company, Flett Ave.
Dept. E. Racine, Wisconsin

for Ford Cars

HOLM MULTI-CHANNEL RADIATOR



38 Individual water channels; larger water area; will not clog; reinforced water passes; all brass is rolled—not stretched thru stamping; lock-seamed joints, automatically dipped in solder; tested under air pressure; packed in strong wooden boxes.

Write for detailed information

HOLM RADIATOR CORPORATION
340 First Avenue, Milwaukee, Wisconsin

*“—because
of Quality”*

Diagonal Honeycomb Core
Square Wireless Honeycomb Core
Mercedes Honeycomb Core
Square Fin Tubular Core

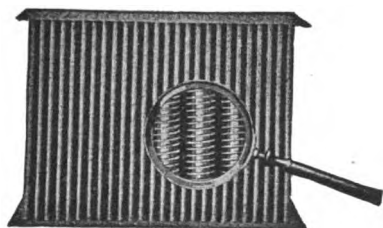
G&O

Radiators

THE G & O MFG. CO.
New Haven :: Conn.

828 N. Broad St., Philadelphia, Pa.
1512 Kresge Bldg., Detroit, Mich.

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Superior Radiation

THE truck or tractor equipped with Rome-Turney Helical Tube Radiator can be depended on to be free from all cooling system troubles.

Rome-Turney Radiators are guaranteed for the life of the truck or tractor.

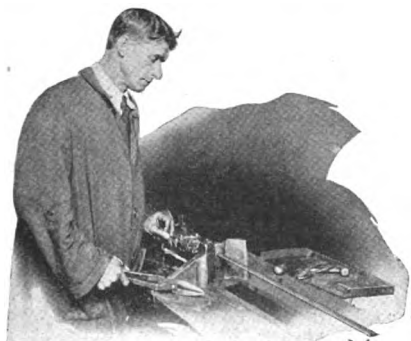
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ROME-TURNEY RADIATOR CO., ROME, NEW YORK

BUSH RADIATORS

FOR TRUCKS, TRACTORS AND AEROPLANES

"BUILT TO ENDURE"



Drawing Our Flat Double-Locked Seam Tube.

This Tube Provides Ample Water Passages and, being only one-eighth of an inch across, allows the maximum amount of air circulation through the CORE.

**THE BUSH MANUFACTURING COMPANY
HARTFORD, CONN.**



WHITE RADIATORS and CORES

are built to give service the year 'round under all climatic conditions. We solicit inquiries and blue prints.

Agents and Dealers Wanted

to handle the new White radiators for Ford cars and trucks

STEIDLE MFG. COMPANY

(Sole Manufacturers)

P. O. Box 173

CINCINNATI, OHIO, U. S. A.

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RADIATORS, Tractor Water Cooling (Continued)

Herkules—See Lockport Radiator Co.
Ideal Sheet Metal Works, 213 N. Morgan St., Chicago, Ill.
K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.
Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
Livingston Radiator Corp., 718 N. Front St., Plainfield, N. J.
Lober Radiator & Mfg. Co.—See Quinn Co.
Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Herkules."
Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.
Long Mfg. Co., Detroit, Mich. (See page 685.)
McCord Mfg. Co., Detroit, Mich. (See page 409.)
Majestic Mfg. & Specialty Co., 1355 S. Michigan Ave., Chicago, Ill.
Main Auto Radiator Works, 619 Tenth Ave., New York, N. Y.
Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
Modine Mfg. Co. (Racine Junction), Racine, Wis. "Spirex."
National Can Co., Detroit, Mich. "Zig-Zag." (See page 681.)
Omaha Auto Radiator Mfg. Co., 1819-21 Cumming St., Omaha, Neb.
Perfection—See Ajax Auto & Aero Sheet Metal Co.
Perfex Radiator Co., Dept. E., Flett Ave., Racine, Wis. (See page 682.)
Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.)
Rex Radiator & Mfg. Co., 248 W. 63th St., New York, N. Y.
Rome-Turney Radiator Co., Rome, N. Y. (See page 683.)
S-J—See Shotwell-Johnson.
Sage Radiator Co., 1052 S. Clinton St., Syracuse, N. Y. (See page 686.)
Shotwell-Johnson, 712-22 Ontario Ave. N., Minneapolis, Minn. "S-J."
Sparks-Withington Co., Jackson, Mich. "Sparton."
Sparton—See Sparks-Withington Co.
Spirex—See Modine Mfg. Co.
Splitex Radiator & Mfg. Co., Fourth & Lake Ave., Racine, Wis.
Standard Radiator Co., Main St., Springville, N. Y.
Steidle Mfg. Co., P. O. Box 173, Cincinnati, O. (See pages 133 and 683.)
Sterling Radiator Co., 1250 W. 76th St., Cleveland, O.
Todd Mfg. Co., 1214 N. 12th St., Minneapolis, Minn.
United States Cartridge Co., Lowell, Mass. (See page 689.)
Western Radiator Co., 410 N. Western Ave., Chicago, Ill.
Wheeler Radiator & Mfg. Co., 1637-39 Collamer Ave., E. Cleveland, O. (See page 539.)
Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.
Zig-Zag—See National Can Co.

RADIATORS, Water Cooling

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection."
Ansted Co., 600 W. 57th St., New York, N. Y.
Atlantic Auto Radiator Co., 1363-65 Ridge Ave., Philadelphia, Pa.
Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Flexo."

Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich. "Maco."
Bowerbank Expansion Radiator Co., 1012-14 S. Los Angeles St., Los Angeles, Cal.
Bremer Mfg. Co., 850 S. Canal St., Chicago, Ill.
Hush Mfg. Co., Hartford, Conn. (See page 683.)
Candler Radiator Co., 1084-86 Jefferson Ave., E., Detroit, Mich. (See page 687.)
Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.
Curran-Detroit Radiator Co., 1984 W. Lafayette Blvd., Detroit, Mich. (See page 687.)
Cutler Auto Radiator Co., Camden, N. J.
English & Mersick Co., New Haven, Conn. (See page 539.)
Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for McCord Radiators.) (See page 113.)
Faber, Schneider Mfg. Co., 2317-27 S. Wash Ave., Chicago, Ill.
Fedders Mfg. Co., Buffalo, N. Y. (See page 691.)
Federal Radiator Co., Zanesville, O.
Flexo—See Auto Radiator Mfg. Co.
Flexo Mfg. Co., 1312-20 E. 12th St., Los Angeles, Cal.
G & O Mfg. Co., New Haven, Conn. (See page 682.)
Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y.
Harrison Radiator Corp., Washburn & Walnut Sts., Lockport, N. Y.
Herkules—See Lockport Radiator Co.
Ideal Sheet Metal Works, 213 N. Morgan St., Chicago, Ill.
Improved Radiator Co., 3833 S. State St., Chicago, Ill.
Indiana Lamp Co., 20th St. & Milton Pike, Connersville, Ind. (See page 770.)
International Radiator Co., 1507 S. Michigan Ave., Ottumwa, Ia.
Jamestown Car Parts Mfg. Co., Allen St. Extension, Jamestown, N. Y.
K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.
Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
Kuenz Radiator Co., Jackson, Mich.
Livingston Radiator Corp., 718 N. Front St., Plainfield, N. J.
Lober Radiator & Mfg. Co.—See Quinn Co.
Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Herkules."
Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.
Long Mfg. Co., Detroit, Mich. (See page 685.)
McCord Mfg. Co., Detroit, Mich. (See page 409.)
McKinnon Dash Co., Buffalo, N. Y. (See page 686.)
Maco—See Automotive Sheet Metal Co.
Main Auto Radiator Works, 619 Tenth Ave., New York, N. Y.
Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
Martin Metal Mfg. Co., Wichita, Kans.
Modine Mfg. Co. (Racine Junction), Racine, Wis. "Spirex."
Monarch Radiator & Fender Works, 632-38 Ellis St., San Francisco, Cal.

Everything is listed under the NOUN or principal word



Photograph shows one of fourteen Cummings Gasolene Locomotives being used on one of the largest road-building projects ever attempted; the construction of more than 300 miles of highway through the state of Arizona, at a cost of \$8,500,000.

Another Example of “LONG” Service

Operating hour after hour, day after day, under every conceivable working condition—with a gear ratio ranging from 5.14-1 to 47.2-1—efficient radiation is a vital factor in the success of Cummings Gasolene Locomotives.

LONG COOLING SYSTEMS have been adopted as standard equipment. They are proving their worth by giving unfailing, reliable service on all kinds of extra-heavy industrial work and construction jobs. On automotive units such as that pictured above they are maintaining the reputation for superiority they have established in the field of motor cars, trucks and tractors.

The LONG Engineering Staff—specialists in automotive radiation—is at all times available to co-operate with the engineering departments of manufacturers in designing or improving cooling systems for any automotive unit.

Long Manufacturing Co.

Detroit, Michigan

LONG
COOLING SYSTEMS
The Recognized Standard For All Automotive Equipment

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SAGE TUBULAR RADIATOR

THE RADIATOR WITH TUBULAR STURDINESS
and HONEYCOMB CAPACITY

SAGE RADIATOR CO., Inc.

1052 S. Clinton St.

Syracuse, N. Y.

EQUIP YOUR RADIATOR WITH A
WINTERFRONT



Pat. April 11, 1916.

FOR FLAT FRONT RADIATORS

A Thermostatic Radiator Shutter entirely automatic in operation. Four special fasteners attach it in two minutes. No cutting—no soldering. In ordering state make and model of car.

PINES MANUFACTURING CO.

Dept. E

408 N. Sacramento Blvd., CHICAGO, ILL.

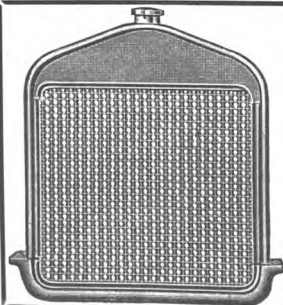
Guarantee Visible Pump

The only pump made that is accurate under all circumstances regardless of lift, temperature, specific gravity or dexterity of the operator.

Write today and let us show you the big possibilities of selling more gasoline with Guarantee Visible Pumps.

**GUARANTEE LIQUID
MEASURE COMPANY**

Rochester, Pa.



THE McKINNON RADIATOR

“REALLY CELLULAR”

COMPLETE FOR FORD CARS

SOME STRONG POINTS

Endorsed and Used on Prominent Makes of Cars. No Experiment One Million in Use on Higher Priced Cars.

Soldered All Over. Consequently Strong, Rigid Mass of Separate Cells. In case of Freezing, Provision is Made for Expansion of Tubes. Facility of Repair in Case of Damage.

ASK FOR LEAFLET

McKINNON DASH COMPANY

Radiator Division

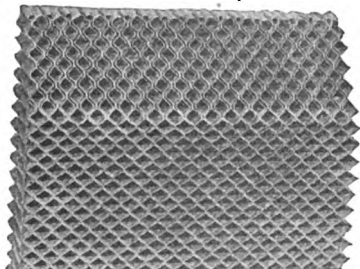
BUFFALO, N. Y.

U. S. A.

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Premier Honeycomb Core

Write for Samples



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RADIATORS BUILT FOR ALL CARS

100% Cooling

No False Fins

Greatest Vibration Resistance

Estimates Cheerfully Given

From Blue Prints Furnished

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N. J. LAMP WORKS, Inc.

Radiator Dept.

NEWARK, N. J.

The CANDLER RADIATOR COMPANY

1084-1086 Jefferson Ave., East

DETROIT, MICH.

Manufacturers
of the

Candler Hexagon

Cellular Radiators

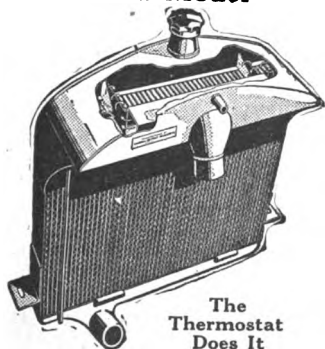
Fuel Tanks

Under Panels

Drawn Fenders

Light Stampings

Ford Model



The
Thermostat
Does It

The CURRAN

An All Year Radiator

From 15 degrees below zero to 100 above—a range of 115 degrees. The Curran is the one radiator built having this range of temperature in mind. Its construction permits solid freezing without injury—its angle strike and simplified thermostatic control regulates the flow of the water to the cooling requirements of the engine (note cut away illustration of our patent circulation control). Special construction adaptable to Ford trucks and delivery cars.

DEALERS—Write us to-day for our exclusive agency proposition. Our method of dealing directly with you facilitates service and insures maximum dealer profits.

A Year's Written Factory Guarantee

"Freezing Is Harmless—Overheating Impossible"

Curran-Detroit Radiator Co.

Automotive Radiation Engineers

1984 W. Lafayette Blvd., Detroit

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RADIATORS, Water Cooling (Continued)

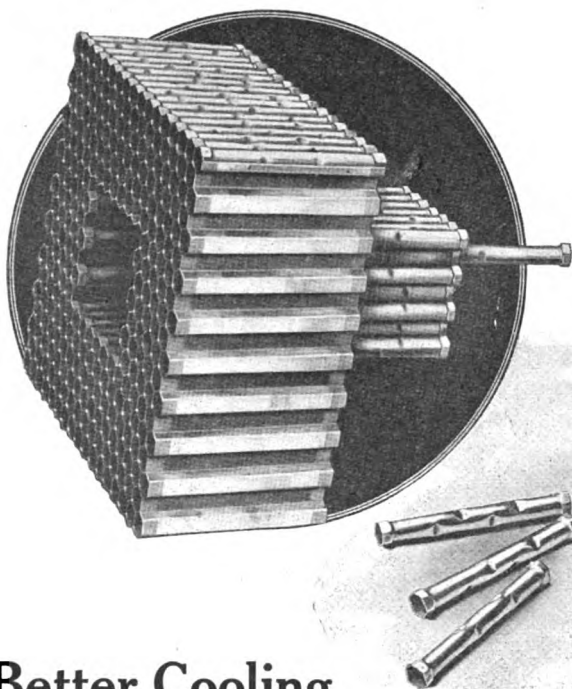
N. J. Lamp Works (Radiator Dept.), Newark, N. J. "Premier." (See page 687.)
 National Can Co., Detroit, Mich. "Zig-Zag." (See page 681.)
 Omaha Auto Radiator Mfg. Co., 1819-21 Cum-ling St., Omaha, Neb.
 Perfection—See Ajax Auto & Aero Sheet Metal Co.
 Perfex Radiator Co., Dept. E., Flett Ave., Racine, Wis. (See page 682.)
 Premier—See N. J. Lamp Works.
 Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.)
 Rex Radiator & Mfg. Co., 243 W. 68th St., New York, N. Y.
 Rome-Turney Radiator Co., Rome, N. Y. (See page 683.)
 S-J.—See Shotwell-Johnson.
 Sage Radiator Co., 1052 S. Clinton St., Syracuse, N. Y. (See page 686.)
 Sheppard Mfg. Co., 1331 W. Jackson Blvd., Chicago, Ill.
 Shotwell-Johnson, 712-22 Ontario Ave. N., Minneapolis, Minn. "S-J."
 Sparks-Withington Co., Jackson, Mich. "Sparton."
 Sparton—See Sparks-Withington Co.
 Spirex—See Modine Mfg. Co.
 Splitter Radiator & Mfg. Co., Fourth & Lake Ave., Racine, Wis.
 Standard Auto Radiator Co., 244 W. 53rd St., New York, N. Y.
 Standard Radiator Co., Main St., Springville, N. Y.
 Steidle Mfg. Co., P. O. Box 173, Cincinnati, O. (See pages 133 and 683.)
 Sterling Radiator Co., 1250 W. 76th St., Cleveland, O.
 Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
 United Radiator Co., 150 N. Broad St., Philadelphia, Pa.
 United States Cartridge Co., Lowell, Mass. (See page 689.)
 Wabash Auto Radiator Mfg. Co., 1117-23 S. Wabash Ave., Chicago, Ill.
 Western Radiator Co., 410 N. Western Ave., Chicago, Ill.
 Wheeler Radiator & Mfg. Co., 1637-39 Collamer Ave., E. Cleveland, O. (See page 539.)
 Wright Cooler & Hood Mfg. Co., 4863-70 N. Clark St., Chicago, Ill.
 Zig-Zag—See National Can Co.

RADIATORS, Water Cooling, for Fords (Regular and V Type)

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y. "Perfection."
 Atlantic Auto Radiator Co., 1363-65 Ridge Ave., Philadelphia, Pa.
 Atlas—See Jonas, C. N. & F. W.
 Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill. "Zig Zag." "Ex-L."
 Bowerbank Expansion Radiator Co., 1013-14 S. Los Angeles St., Los Angeles, Cal.
 Bulldog—See Livingston Radiator Corp.
 Candler Radiator Co., 1084-86 Jefferson Ave., E., Detroit, Mich. (See page 687.)
 Columbia Auto Radiator Co., 902-06 Race St., Cincinnati, O.
 Corcoran Mfg. Co., Section & Foraker Aves., (Norwood), Cincinnati, O. "Peerless."
 Curran-Detroit Radiator Co., 1884 W. Lafayette Blvd., Detroit, Mich. (See page 687.)

Doric—See Motor Truck Radiator & Mfg. Co.
 El Arco Radiator Co., West End Ave. & 64th St., New York, N. Y.
 Emco—See Motor Truck Radiator & Mfg. Co.
 Ex-L—See Auto Radiator Mfg. Co.
 Faber, Schneider Mfg. Co., 2317-27 S. Wabash Ave., Chicago, Ill.
 Fedders Mfg. Co., Buffalo, N. Y. (See page 691.)
 Firestone Radiator Mfg. Co., 2530 14th Ave., Detroit, Mich.
 Flexo Mfg. Co., 1312-20 E. 12th St., Los Angeles, Cal.
 Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 415.)
 G. & O. Mfg. Co., New Haven, Conn. (See page 682.)
 Gordon Radiator Co., 143d St. & Wales Ave., New York, N. Y.
 Herkules—See Lockport Radiator Co.
 Holm Radiator Corp., 340 First Ave., Milwaukee, Wis. (See page 682.)
 Ideal Sheet Metal Works, 213 N. Morgan St., Chicago, Ill.
 Improved Radiator Co., 3833 S. State St., Chicago, Ill.
 International Radiator Co., 1507 S. Michigan Ave., Ottumwa, Ia.
 Jackson Auto Radiator Works, 664-68 Washington Blvd., Chicago, Ill.
 Jaffe Radiator Co., 741 W. Van Buren St., Chicago, Ill. (See page 747.)
 Jamestown Car Parts Mfg. Co., Allen St. Extension, Jamestown, N. Y.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Steidle Mfg. Co., Cincinnati, Ohio. "Atlas.")
 K. & L. Radiator Mfg. Co., 215-17 W. 31st St., Chicago, Ill.
 Livingston Radiator Corp., 718 N. Front St., Plainfield, N. J. "Bulldog."
 Lober Radiator & Mfg. Co.—See Quinn Co.
 Lockport Radiator Co., 293 Market St., Lockport, N. Y. "Herkules."
 Long Auto Parts Mfg. Co., E. F., 1915-17 Pine St., St. Louis, Mo.
 McKinnon Dash Co., Buffalo, N. Y. (See page 686.)
 Main Auto Radiator Works, 619 Tenth Ave., New York, N. Y. "Strongford."
 Majestic Mfg. & Specialty Co., 1335 S. Michigan Ave., Chicago, Ill. (Dealers.) (See page 373.)
 Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
 Modine Mfg. Co.—See Zinke Co.
 Monarch Radiator & Fender Works, 632-38 Ellis St., San Francisco, Cal.
 Motor Truck Radiator & Mfg. Co., 255 W. 58th St., New York, N. Y. "Emco." "Doric."
 N. J. Lamp Works (Radiator Dept.), Newark, N. J. "Premier." (See page 687.)
 National Can Co., Detroit, Mich. "Zig-Zag." (See page 681.)
 Omaha Auto Radiator Mfg. Co., 1819-21 Cum-ling St., Omaha, Neb.
 Peerless—See Corcoran Mfg. Co.
 Perfection—See Ajax Auto & Aero Sheet Metal Co.
 Perfex Radiator Co., Dept. E., Flett Ave., Racine, Wis. (See page 682.)
 Premier—See N. J. Lamp Works.
 Quinn Co., Nelson J., Toledo, O. (Sole Distributors for Lober Radiator & Mfg. Co., Toledo, O.)
 Rex Radiator & Mfg. Co., 243 W. 68th St., New York, N. Y.
 Rome-Turney Radiator Co., Rome, N. Y. (See page 683.)
 S-J.—See Shotwell-Johnson.
 Sage Radiator Co., 1052 S. Clinton St., Syracuse, N. Y. (See page 686.)

Everything is listed under the NOUN or principal word



Better Cooling

The radiator is the major factor in a good automobile cooling system. The radiator should be light, compact, proof against clogging, strong, non-corrodible.

The Cartridge Core has these features to the maximum degree. Built up of individual, seamless copper tubes, it is strong because it is elastic; it will bend before it cracks.

The Cartridge Core cannot clog, because the water is free to flow in all directions. It is permanently efficient.

The tubes in Cartridge Cores are made by an extrusion process perfected during the war and used in the manufacture of several billion rifle cartridges.

All U. S. Army aircraft have for several years been using Cartridge Core Radiators. This severe service shows the unusual merit of this new type of core.

When a car owner needs a new radiator, put in a Cartridge Core. It'll make him a friend for life. In fact, it's a good bet to sell him one of these cores before he has trouble.

Send for information and prices

UNITED STATES  CARTRIDGE CO.
Lowell Mass.

Cartridge CORES

Please mention The Automobile Trade Directory

RADIATORS, Water Cooling, for Fords (Regular and V Type) (Continued)

Sheppard Mfg. Co., 1331 W. Jackson Blvd., Chicago, Ill.
Shotwell-Johnson, 712-22 Ontario Ave., N., Minneapolis, Minn. "S-J."
Sparks-Withington Co., Jackson, Mich. "Sparton."
Sparton—See Sparks-Withington Co.
Spirex—See Zinke Co.
Standard Radiator Co., Main St., Springville, N. Y.
Stedde Mfg. Co.—See Jonas, C. N. & F. W.
Sterling Radiator Co., 1250 W. 76th St., Cleveland, O.
Strongford—See Main Auto Radiator Works.
Superford—See Superior Lamp Mfg. Co.
Superior Lamp Mfg. Co., 148-50 W. 52d St., New York, N. Y. "Superford."
Tompson, N. W., 10 Scotia St., Boston, Mass. (New England Distributors for Emco and Doric Radiators.) (See page 161.)
Todd Mfg. Co., 12-14 N. 12th St., Minneapolis, Minn.
Wabash Auto Radiator Mfg. Co., 1117-23 S. Wabash Ave., Chicago, Ill.
Waterbury Auto Radiator Co., 453 W. Main St., Waterbury, Conn.
Western Radiator Co., 410 N. Western Ave., Chicago, Ill.
Witte Auto Radiator Corp., 2237 Hampden Ave., St. Paul, Minn.
Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.
Zig Zag—See Auto Radiator Mfg. Co.
Zig-Zag—See National Can Co.
Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Modine Mfg. Co., Racine, Wis. "Spirex.")

RADIATORS, WATER COOLING TRACTOR—See Radiators, Tractor Water Cooling

RADIUS ROD SILENCERS FOR FORDS— See Anti-Rattlers, Radius Rod

RADIUS RODS FOR FORDS—See Rods, Radius

RAGS, WIPING—See Wipers

RAILS, COAT—See Rails, Robe or Coat

RAILS, FOOT—See Rests or Rails, Foot

RAILS, Robe or Coat

(Metal rails or leather or fabric straps for attaching to back of front seats to hold robes or coats)

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.
Allen Fire Department Supply Co., Providence, R. I.
American Brass Novelty Co., Grand Haven, Mich.
Amesbury Brass & Foundry Co., Amesbury, Mass.
Armard Machine Works, 3670 Milwaukee Ave., Chicago, Ill. "Utility."
Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
Auto Brass Mfg. Co., 3514-20 S. Michigan Ave., Chicago, Ill.
Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)

Bantlin Co., Julius J., Cincinnati, O.
Capitol Brass Works, 2306 Franklin St., Detroit, Mich.
Carter Co., George R., Connersville, Ind.
Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
Columbus Auto Parts Co., 215 E. Russell St., Columbus, O.
Columbus Brass Co., 540 Dublin Ave., Columbus, O.
Cowles & Co., C., New Haven, Conn. (See page 451.)
Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)
Detroit Automotive Corp., 320 W. Fort St., Detroit, Mich. "Thef Pruf."
Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
English & Mersick Co., New Haven, Conn. (See page 539.)
Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
Hunt & Co., E. J., Dayton, O. (Sales Representatives for Thomson Mfg. Co., S. H., Dayton, O.)
Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
Jonah & George, Little's Ct., Merrimac, Mass.
Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
Meyer Scale & Hardware Co., 328 Adams St., Newark, N. J.
Moline Iron Works, 228 Second St., Moline, Ill.
Monarch Carriage Goods Co., Marshall & Spring Grove Ave., Cincinnati, O. (See page 929.)
Neidhardt & Co., C., 81 N. Water St., Rochester, N. Y.
O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
Robe Rail Sales Corp., 1776-78 Broadway, New York, N. Y.
Rostand Mfg. Co., Milford, Conn.
Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.
Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
Sterling—See Auto Accessories Mfg. Co.
Sutherland Leather & Felt Co., 139 Beaubien St., Detroit, Mich.
Thef Pruf—See Detroit Automotive Corp.
Thomson Mfg. Co.—See Hunt & Co.
Utility—See Armard Machine Works.
Wagner Mfg. Co., E. R., North Milwaukee, Wis.
Wakefield Sales Co., Trempealeau, Wis.
Waterhouse & Freeman Mfg. Co., 319 N. J. R. Ave., Newark, N. J.
Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)
Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

RAILS, Robe or Coat, for Fords

(Metal rails or leather or fabric straps for attaching to back of front seats to hold robes or coats)

Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
Dependable—See Gahm-McCormick Co.
Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Everything is listed under the NOUN or principal word

There is a Fedders Radiator for Every Purpose

Backed by an experience that dates from the industry's beginning, Fedders offers a choice of various radiator types to best meet the special cooling demands of each vehicle.

Big seven-ton trucks, light delivery cars, the highest priced limousines and the special-cooled runabout, all are proving in daily service that Fedders Radiators best solve their motor cooling problems.

"Ask Fedders"

Fedders Manufacturing Co., Inc.
Buffalo, N. Y.



FEDDERS

AUTOMOTIVE RADIATORS

Please mention The Automobile Trade Directory

RAILS, Robe or Coat, for Fords**(Continued)**

Gahm-McCormick Co., 806 E. Main St.,
 Streator, Ill. "Dependable."
 (See page 171.)

Humboldt—See Republic Auto Parts Co.
 Monarch Carriage Goods Co., Marshall &
 Spring Grove Ave., Cincinnati, O.
 (See page 929.)

Proos Mfg. Co., Grand Rapids, Mich.
 Republic Auto Parts Co., 81-85 Tenth St.,
 Long Island City, N. Y. "Sterling."
 Sterling—See Republic Auto Parts Co.
 Wakefield Sales Co., Trempealeau, Wis.
 Western Brass Mfg. Works, Marshall
 Blvd. & 21st St., Chicago, Ill.
 (See page 471.)

RAIN COATS—See Clothing, Motorists'

**RAIN SHIELDS—See Visors, Top; also
 Visors, Wind Shield**

RAISING SKIDS—See Skids, Car Raising

RASPS AND FILES—See Files and Rasps

RATCHET DRILLS—See Drills, Ratchet

**RATCHET PEDALS—See Pedals, Horn
 and Cut-out**

**RATCHET PINS FOR FORDS—See Pins,
 Crank Ratchet**

**RAWHIDE GEARS—See Gears and Pin-
 ions, Rawhide, Fibre and Fabric.**

**RAWHIDE PINIONS—See Gears and Pin-
 ions, Rawhide, Fibre and Fabric.**

**REAL ESTATE BROKERS—See Brokers,
 Real Estate**

**REAMER GRINDERS — See Grinders,
 Reamer**

**REAMERS, ADJUSTABLE—See Reamers,
 Standard**

**REAMERS, BATTERY CONNECTOR—See
 Tools, Storage Battery Repair**

**REAMERS, BEARING, FOR FORDS—See
 Reamers, Main Bearing**

**REAMERS, BUSHING FOR FORDS—See
 Reamers, Drive Shaft Bushing; also Ream-
 ers, Piston Bushing; also Reamers,
 Transmission Bushing**

**REAMERS, CONNECTING ROD, FOR
 FORDS—See Reamers, Main Bearing**

**REAMERS, CYLINDER FOR FORDS—See
 Reamers and Jigs, Cylinder**

**REAMERS, Drive Shaft Bushing for
 Fords**

Alvord Reamer & Tool Co., Millersburg,
 Pa. (See page 701.)

Detroit Garage Equipment Co., 406 E. Jeffer-
 son Ave., Detroit, Mich.
 Dual Mfg. Co., 1424 Nicollet Ave., Minneapolis,
 Minn.

**REAMERS, Main Bearing and Con-
 necting Rod, for Fords**

Dyer Co., 155 Brookline St., Cambridge, Mass.
 Fairbanks Co., New York, N. Y. (Sole Dis-
 tributors for Hempy-Cooper Mfg. Co.,
 Kansas City, Mo.)
 (See pages 491 to 494.)

Hempy-Cooper Mfg. Co.—See Fairbanks Co.
 Hinckley-Myers Co., Water St., Jackson, Mich.
 Keystone Reamer & Tool Co., Millers-
 burg, Pa. (See page 693.)

Lewis Tool Co., 612 Fifth Ave., S., Minne-
 apolis, Minn.

Mayhew Steel Products, 291 Broadway, New
 York, N. Y.

Moore Engineering Co., Penna. Ave. & W. M.
 R. R., Hagerstown, Md. "Moreno."

Moreno—See Moore Engineering Co.
 Railway Specialty Co., Atchison, Kans.
 "Rysco."

Rysco—See Railway Specialty Co.
 Shepard-Thomason Co., 509-08 W. Pico
 St., Los Angeles, Cal. "Thomason."
 (See page 629.)

Thomason—See Shepard-Thomason Co.
 Universal Tool Co., Garwood, N. J. "Uteo."
 (See page 433.)

Uteo—See Universal Tool Co.
 Watervliet Tool Co., 1031-41 Broadway, Al-
 bany, N. Y.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.

REAMERS, Piston Bushing for Fords

American—See Service Station Equipment Co.
 Chadwick & Trefethen, Portsmouth, N.
 H. "Critchley." (See page 695.)

Critchley—See Chadwick & Trefethen.
 F-J—See Foster-Johnson Reamer Co.

Foster-Johnson Reamer Co., 1072 Beardsley
 Ave., Elkhart, Ind. "F-J."

Mayhew Steel Products, 291 Broadway, New
 York, N. Y.

Service Station Equipment Co., 37th St. & S.
 Ashland Ave., Chicago, Ill. "American."

Tribune Engineering Co., Front St., Owego,
 N. Y.

**REAMERS, Standard and Adjust-
 able**

Acme—See Schellenbach-Hunt Tool Co.
 Adamantine—See American Tap & Die Co.
 Alvord Reamer & Tool Co., Millersburg,
 Pa. (See page 701.)

American Machine Products Co., 18th &
 Howard Sts., Detroit, Mich. "Ampco."

American Tap & Die Co., Greenfield,
 Mass. "Adamantine." (See page 853.)

Ampco—See American Machine Products Co.
 Arrow Tool & Reamer Co., 422 Artillery Ave.,
 Detroit, Mich.

Asch & Co., Inc., 16-24 W. 61st St., New
 York, N. Y. (Eastern Distributors for
 Watervliet Tools.) (See page 247.)

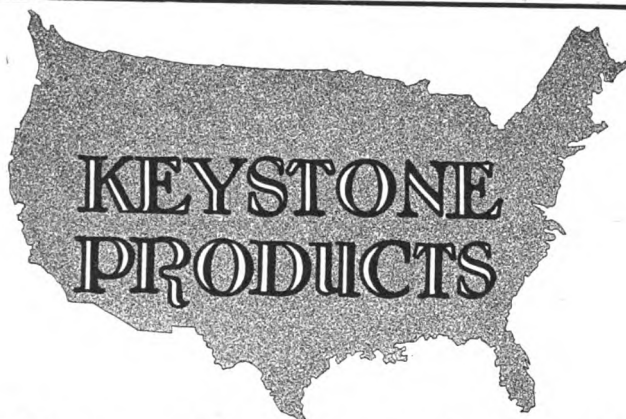
Beard Tool Co.—See Lancaster Sales Co.

Blancke Co., L. C., 10-12 Thomas St., New
 York, N. Y. (Sole Distributors for Blancke
 Twist Drill & Tool Co., Taunton, Mass.)

Blancke Twist Drill & Tool Co.—See Blancke
 Co.

Brubaker & Bros., W. L., 60 Church St., New
 York, N. Y.

Everything is listed under the NOUN or principal word



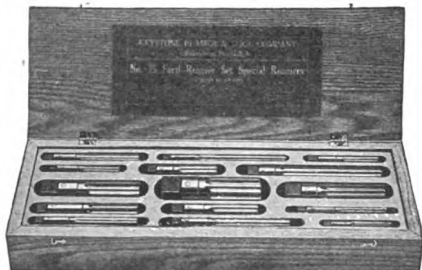
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KEYSTONE REAMERS & MILLING CUTTERS FOR AUTOMOBILES



**Keystone Expansion Reamers
Especially Designed for
Ford Cars.**

Expansion Reamers have the advantage over solid Reamers of being adjustable as to size. They are finished very close to size and can be adjusted from about .006 to .015 of an inch larger. They should be set to the correct size before using.



FORD SET No. 15

**Thirteen Reamers covering
20 Bushings, taking care of
every bushing that needs
replacement.**

We also manufacture Cylinder Reamers for Fords; Die and Screw Plate Sets; Hand Reamers in all sizes for all uses. Taper Pin Reamers. Write for complete catalog and prices.

Reamers in Set No. 15

2713-14-P	(with Pilot) Spindle	259X	Hub Cam Shaft
3521	Steering Gear Shaft	3042	
3309	Transmission Slow Speed	3043	Cam Shaft Front, Center and
3820	Front and Rear Spring Perch	3044	Rear Bearing and Steering
3844		3545	Post Bracket Bushings
3052-B	Valve Stem. Oversize	3022 1/2-P	Piston Pin (with Pilot)
3058-B	Push Rod. Oversize	3314 1/2	Transmission Triple Gear
3320-B-C	Transmission Driven Sleeve	3304	Transmission Reverse Gear
3311	Transmission Driving Plate	1076	Universal Joint Ford Truck
3327-B			

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Chicago Office, 180 N. Market St.

Los Angeles Office, Higgins Bldg., Cor. Second and Main

New York Office, 30 Warren St.

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REAMERS, Standard and Adjustable (Continued)

- Butterfield & Co., (Division of Union Twist Drill Co.), Derby Line, Vt.
 Cashman Tool Co., Waynesboro, Pa.
 Chadwick & Trefethen, Portsmouth, N. H. "Critchley." (See page 695.)
 Clark Equipment Co., Buchanan, Mich.
 Cleveland Twist Drill Co., Cleveland, O. "Paradox," "Peerless." (See page 367.)
 Clough, R. M., Tolland, Conn.
 Critchley—See Chadwick & Trefethen.
 Critchley—See Lancaster Sales Co.
 Cruban Machine & Steel Corp., 63 Duane St., New York, N. Y.
 Davis Boring Tool & Mfg. Co., 3700 Forest Park Blvd., St. Louis, Mo.
 Detroit, Reamer & Tool Co., 1326 E. Congress St., Detroit, Mich.
 Detroit Twist Drill Co., Detroit, Mich. (See page 351.)
 Diamond—See Whitman & Barnes Mfg. Co.
 Fastfeed Drill & Tool Corp., Clinton & Oakwood Sts., Toledo, O.
 Foster-Johnson Reamer Co., 1072 Beardsley Ave., Elkhart, Ind. "Kyllin."
 G. M.—See General Machine Works.
 Gale-Sawyer Co., 36 Oliver St., Boston, Mass.
 General Machine Works, Lamour & Prospect Sts., York, Pa. "G. M."
 Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.
 Goddard & Goddard Co., 4724 Hastings St., Detroit, Mich.
 Greenfield Tap & Die Corp., Greenfield, Mass. "Hercules." (See page 855.)
 Hercules—See Greenfield Tap & Die Corp.
 Ideal—See McCrosky Tool Co.
 Illinois Tool Works, 154 E. Erie St., Chicago, Ill.
 Kelly Reamer Co., 3705 W. 73rd St., Cleveland, O.
 Keystone Reamer & Tool Co., Millersburg, Pa. (See page 693.)
 Kylin—See Foster-Johnson Reamer Co.
 Lancaster Sales Co., Lancaster, Pa. (Sole Distributors for Beard Tool Co., L. O., Lancaster, Pa. "Critchley.") (See page 695.)
 Lincoln Twist Drill Co., Arlington St., Taunton, Mass.
 McCarthy Drill & Tool Corp., 30 Church St. New York, N. Y.
 McCrosky Tool Corp., Meadville, Pa. "Ideal."
 Martell—See Taft-Peirce.
 Mayhew Steel Products, 291 Broadway, New York, N. Y.
 Millersburg Reamer & Tool Co., Millersburg, Pa.
 Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.
 National Twist Drill & Tool Co., 6522 Brush St., Detroit, Mich.
 New Britain Tool & Machine Co., 5 Harvard St., New Britain, Conn.
 Ohio Reamer Co., 5337 St. Clair Ave., Cleveland, O. (See page 632.)
 One Lock Reamer Co., New Haven, Conn.
 Paradox—See Cleveland Twist Drill Co.
 Peerless—See Cleveland Twist Drill Co.
 Perelstrous & Storms Tool Corp., 42 Broadway, New York, N. Y.
 Peters, Inc., Widener Bldg., Philadelphia, Pa. (See page 695.)
 Polk & Son Co., A. J., Millersburg, Pa.
 Pratt & Whitney Co., 111 Broadway, New York, N. Y.
- Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1058.)
 Rogers Works, John M., ft. Monmouth St., Gloucester City, N. J.
 Schellenbach-Hunt Tool Co., 120 Opera Pl., Cincinnati, O. "Acme."
 Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.
 Staff, J. Wadsworth, 122 S. Michigan Blvd., Chicago, Ill. "Sure-Mike." (Dealer.) (See page 701.)
 Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
 Stapf & Co., John B., Dunkirk, N. Y.
 Sure-Mike—See Staff, J. Wadsworth.
 Taft-Peirce Mfg. Co., Woonsocket, R. I. "Martell."
 Watervliet Tool Co., 1031-41 Broadway, Albany, N. Y.
 Wetmore Reamer Co., 60-64 27th St., Milwaukee, Wis.
 Whitman & Barnes Mfg. Co., E. Exchange St., Akron, O. "Diamond."

REAMERS, Transmission Bushing, for Fords

- Asch & Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Watervliet Reamers.) (See page 247.)
 Chadwick & Trefethen, Portsmouth, N. H. "Critchley." (See page 695.)
 Critchley—See Chadwick & Trefethen.
 Keystone Reamer & Tool Co., Millersburg, Pa. (See page 693.)
 Mayhew Steel Products, 291 Broadway, New York, N. Y.
 Tribune Engineering Co., Front St., Owego, N. Y.
 Watervliet Tool Co., 1031-41 Broadway, Albany, N. Y.
 Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.

REAMERS AND JIGS, Camshaft Aligning for Fords

- Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.

REAMERS and JIGS, Cylinder, for Fords

- Alvord Reamer & Tool Co., Millersburg, Pa. (See page 701.)
 Chadwick & Trefethen, Portsmouth, N. H. "Critchley." (See page 695.)
 Critchley—See Chadwick & Trefethen.
 Dyer Co., 155 Brookline St., Cambridge, Mass.
 F-J—See Foster-Johnson Reamer Co.
 Foster-Johnson Reamer Co., 1072 Beardsley Ave., Elkhart, Ind. "F-J."
 Kelly Reamer Co., 3705 W. 73rd St., Cleveland, O.
 Keystone Reamer & Tool Co., Millersburg, Pa. (See page 693.)
 Tribune Engineering Co., Front St., Owego, N. Y.
 Wetmore Reamer Co., 60-64 27th St., Milwaukee, Wis.

REAMING BUSHINGS—See Bushings, Drill- ing and Reaming

REAR AXLE GREASE RETAINERS FOR FORDS—See Retainers, Rear Axle Grease

REAR AXLE REPAIR STANDS FOR FORDS—See Stands, Rear Axle Repair

Everything is listed under the NOUN or principal word

"SIX BLADES"**CRITCHLEY EXPANSION
HAND REAMERS**

Size	Diameter, Inches	Price, Ea.
A	15/32 expands to 17/32	\$4.50
B	17/32 expands to 19/32	4.50
C	19/32 expands to 21/32	4.75
D	21/32 expands to 23/32	4.75
E	23/32 expands to 25/32	5.00
F	25/32 expands to 27/32	5.00
G	27/32 expands to 15/16	5.50
H	15/16 expands to 1 1/16	5.80
I	1 1/16 expands to 1 3/16	7.00
J	1 3/16 expands to 1 11/32	8.00
K	1 11/32 expands to 1 17/32	10.00
L	1 17/32 expands to 1 25/32	11.50

Manufactured by

L. O. BEARD TOOL CO.,**Lancaster, Pa.**

SERVICE SET No. 1
In Service Boxes as follows:
Sizes, A to H
Cutting Radius, 15/32 to 1 1/16
(Eight Complete Reamers)
Price, \$39.50

SERVICE SET No. 2
In Service Boxes as follows:
Cutting Radius, 1 1/16 to 1 25/32
Sizes, I to L
(Four Complete Reamers)
Price, \$36.50
Distributed by

LANCASTER SALES CO., Lancaster, Pa.**PETERS**

TRADE MARK

PRODUCTS**TIME AND LABOR SAVING EQUIPMENT****UNIVERSAL BEARING REAMER..... \$250.00**

A combination boring and babbiting tool for main and connecting rod bearings.
Reams all bearings to size and alignment with one setting.
Can be operated in all standard types of four, six, eight, and twelve cylinder motors.
Full universal adjustment that can be set standard for any one type of motor.

CRANKSHAFT GRINDER.....\$75.00

A hand tool producing results that surpass an expensive power driven machine.
ONE quick and simple adjustment.
Can be operated without dismantling the motor.
Will true a shaft in one-fifth the time ordinarily required.

CYLINDER SURFACE PLANER.....\$6.00

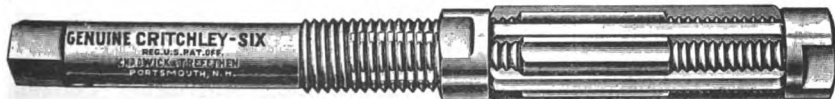
For finishing off the excess Metallic Filler from a scored cylinder repair, in perfect cylindrical alignment.
Cannot scar the cylinder wall.
Instantly adjustable to all sizes of cylinders.

METALLIC FILLER.....per pound \$5.50

For the repair of scored cylinders, cracked water jackets and other imperfections in iron, steel, brass and bronze castings.
Working at 300° makes a wear-resisting repair which will sustain a pressure of 75 to 100 pounds per square inch.

ALUMINUM BRAZING COMPOUND.....per pound \$3.50

Guaranteed non-corrosive-resisting chemical action of oil.
Working at 500° makes a stronger repair than any known method of aluminum welding or soldering and without risk of warping or distortion.

Widener Building**PETERS, INCORPORATED****Philadelphia, Pa.****GENUINE CRITCHLEY EXPANDING REAMERS**

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CHADWICK & TREFETHEN, PORTSMOUTH, N. H.

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REAR AXLE SHAFTS—See Shafts, Rear Axle

REAR AXLE SLEEVE PULLERS FOR FORDS—See Pullers, Axle Sleeve Bearing

REAR AXLE SPINDLES FOR FORDS—See Spindles, Emergency Rear Axle

REAR AXLE TAPER SHIMS FOR FORDS—See Shims, Rear Axle Taper

REAR AXLE TRUSS RODS FOR FORDS—See Rods, Rear Axle Truss

REAR AXLES—See Axles, Rear

REAR AXLES FOR FORDS—See Axles, Worm Drive Rear

REBABBITTING JIGS for Fords—See Jigs, Main Bearing and Connecting Rod Babbitting

REBORING MACHINES—See Machines, Cylinder Reborring; for Cylinder Reborring Tools—See Tools, Portable Cylinder Reborring

REBORING TOOLS—See Tools, Portable Cylinder Reborring

REBOUND STRAPS—See Straps, Rebound

RECEIVERS, ASH—See Receptacles, Ash

RECEPTACLES, Ash

Ash & Co., Inc., 16-24 W. 61st St., New York, N. Y. (See page 247.)

Backus Novelty Co., 707 Water St., Smethport, Pa.

Cuno Engineering Corp., Meriden, Conn. (See page 525.)

Fargo Co., Ripon, Wis.

Hawthorne Lamp Works, 1410 Michigan Ave., Chicago, Ill.

Markoni Co., Detroit, Mich. (See page 498.)

Maurer Co., O., 1817 Bushwick Ave., Brooklyn, N. Y. (See page 941.)

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)

RECHARGERS, MAGNET—See Chargers, Magneto Magnet

RECORDERS, Gasoline

(Recording device to indicate or record the amount of gasoline or oil drawn from storage tanks)

National Liquid Recording Corp., 105 W. 40th St., New York, N. Y.

RECORDERS, Gasoline and Oil

(Small recording device to fasten to cowl board or steering wheel to facilitate the keeping of gasoline and oil purchases)

Autolog Co., 1032 S. Grand Ave., Los Angeles, Cal. (See page 567.)

RECORDERS, TIME—See Clocks, Watchman's

RECORDERS, Vehicle Movement

(For recording time vehicle is used)

American Taximeter Co., 16 W. 61st St., New York, N. Y. "Recordograf."

Brown Spring Oiler Co., 6911 Carnegie Ave., Cleveland, O. "Tranlog."

Hoggson & Co., S. H., Thames Bldg., New York, N. Y. "Joyometer."

Joyometer—See Hoggson & Co.

Ohmer Fair Register Co., Bolender & Big Four R. R., Dayton, O.

Recordograf—See American Taximeter Co.

Sattler, Hans, Sheboygan, Wis.

Service Recorder Co., 3344 E. 195th St., Cleveland, O. "Servia."

Servis—See Service Recorder Co.

Tranlog—See Brown Spring Oilier Co.

RECORDING BAROGRAPHS—See Barographs, Recording

RECORDING CLOCKS—See Clocks, Time Recording and Watchman's

RECTIFIERS, Alternating Current

(For transforming alternating current to direct current for storage battery charging)

Ab-rec—See American Battery Co.
Advance Electric Co., 181 E. Sixth St., Los Angeles, Cal.

American Battery Co., 1132-34 Fulton St., Chicago, Ill. "Amrec," "Ab-rec."

Amrec—See American Battery Co.

Beacon Rectifier Co., 6 Dell Terrace, Boston, Mass.

Cambridge—See Clapp-Eastham Co.

Clapp-Eastham Co., 139 Main St., Cambridge, Mass. "Cambridge."

Electric Products Co., Cleveland, O. "Wotton."

Electro Rectifier Co., 739 Polk St., San Francisco, Cal.

F. F.—See France Mfg. Co.

Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo. (See page 725.)

Forest Electric Co., 50 Columbia St., Newark, N. J.

France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F. F."

General Electric Co., Schenectady, N. Y. "Tungar." (See page 697.)

Hertner Electric & Mfg. Co., 1905 W. 112th St., Cleveland, O.

Mohawk Electric Mfg. Co., 15 Kirk Pl., Newark, N. J.

Murphy Electricity Rectifier Co., 187 N. Water St., Rochester, N. Y.

Rectigon—See Westinghouse Electric & Mfg. Co.

Shonta Co., H. B., Dept. C, 161 W. 64th St., New York, N. Y. (Dealers.)

(See page 151.)

Sirch Electrical & Testing Laboratories, 136 W. Third St., Los Angeles, Cal.

Stahl Rectifier Co., 1401 W. Jackson Blvd., Chicago, Ill.

Tungar—See General Electric Co.

United Electric Apparatus Co., 1529 Columbus Ave., Boston, Mass.

Valley Electric Co., 4919 Connecticut Ave., St. Louis, Mo.

Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. "Rectigon."

Wotton—See Electric Products Co.

RECTIFIERS, Alternating Current, for Fords

Small chemical rectifier to be attached to the car to permit the charging of storage batteries from the magnet

F. F.—See France Mfg. Co.

France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F. F."

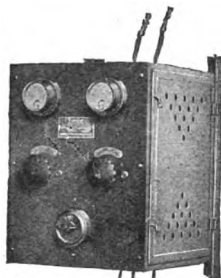
Illinois Starter & Magneto Co., 2450 Calumet Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

A Tungar for Every Use

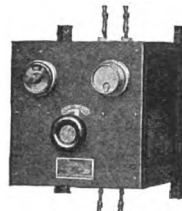
Storage batteries may be charged from any alternating current circuit with a Tungar. This battery charger, simple, low priced, and highly efficient is made in capacities to suit various needs. It has been approved by the National Board of Fire Underwriters.

The 12-ampere 75-volt Tungar charges one to ten 6-volt batteries at 12 amperes or less, or one to twenty 6-volt batteries at 6 amperes or less. It measures but 15" by 12" by 13" in size, thus taking up but little wall space.



Twenty Battery Set

The 6-ampere 75-volt Tungar charges one to ten 6-volt batteries at 6 amperes or less. It is slightly smaller than the 20-battery set from which it differs only in capacity.



Ten Battery Set

The 5-ampere 30-volt Tungar charges one to four 6-volt batteries at 5 amperes or less. This is known as the 4-battery set and is ideal for the small garage where a higher investment in battery charging equipment would not be justified.



Four Battery Set

The 5-ampere 7.5-volt Tungar charges one 6-volt battery at 5 amperes or one 12-volt battery at 3 amperes or one 18-volt battery at 1.5 amperes. There is also a 2-ampere Tungar for charging a 6-volt battery at 2 amperes or a 12-volt battery at one ampere.

Bulletin Y-1457 sent on request



One Battery Set

General Electric Company

General Office
Schenectady, NY

Sales Offices in
all large cities

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REDUCING VALVES OR REGULATORS—See *Regulators, Acetylene Pressure***REEDS, Horn**

Riley-Klots Mfg. Co., 17 Mulberry St., Newark, N. J.

REEL LIGHTS—See *Lamps, Electric Hand or Inspection*; also *Lights, Spot***REELS, Automatic Extension Lamp**

Anderson Electric & Equipment Co., 154-50 Whiting St., Chicago, Ill. "Reelite."

Autex—See *Cincinnati Specialty Mfg. Co.*

Cincinnati Specialty Mfg. Co., 1911 Powers St., W., Cincinnati, O. "Autex." (See page 701.)

Clark—See *Fitt Machine Co.*

Fitt Machine Co., Jas., 120 Congress Ave., Rochester, N. Y. "Clark."

Reelite—See *Anderson Electric & Equipment Co.***REELS, Automatic Hose**

Detroit Reoller Mfg. Co., Dime Bank Bldg., Detroit, Mich.

Eco—See *Western Mfg. Co.*

Western Mfg. Co., Sixth Ave., E. & S. Third St., Oskaloosa, Ia. "Eco."

REFACERS, VALVE—See *Tools, Valve Re-seating***REFLECTING MIRRORS, COWL LIGHT—**See *Mirrors, Cowl Light Reflecting***REFLECTORS, GAGE GLASS—**See *Mirrors, Water Gage***REFLECTORS, HEADLIGHT—**See *Reflectors, Mirror Lamp***REFLECTORS, Headlight, for Fords***(Parabolic Reflectors for electric lights)*C-E—See *Culver-Stearns Mfg. Co.*

Columbus Auto Brass Co., Columbus, O. (See page 381.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass. "C-S."

Faw Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for "C-S." Reflectors.) (See page 429.)

Full-Ray—See *Teepell, Edward A.*

Lake Erie Accessories Co., 1212-50 W. Sixth St., Cleveland, O. "Simmons."

Rosco—See *Rosen & Co.*

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

Simmons—See *Lake Erie Accessories Co.*

Teepell, Edward A., 1533 N. 63d St., Philadelphia, Pa. "Full-Ray."

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

REFLECTORS, LAMP—See *Reflectors, Mirror Lamp***REFLECTORS, Mirror Lamp***(For special blinding reflectors—See Dimmers)*

Bache & Co., Semon, West & Hubert Sts., New York, N. Y.

Bausch & Lomb Optical Co., Rochester, N. Y. (See page 337.)

Fry Glass Co., H. C., Rochester, Pa.

Jefferson Glass Co., State St., Follansbee, W. Va.

Lancaster Lens Co., 229-26 W. Main St., Lancaster, O.

Macbeth-Evans Glass Co., Pittsburgh, Pa. (See page 333.)

Mattise Corp., C. & A., 542-49 E. 116th St., New York, N. Y.

Standard Glass Specialty Co., Morgantown, W. Va.

REGISTERS, Autographic and Manifold

American Sales Book Co., 631 Magee St., Elmira, N. Y.

Autographic Register Co., Tenth & Clinton Sts., Hoboken, N. J. "Shouperior."

Automatic Bookkeeping Register Co., 18th & Wyandotte Sts., Kansas City, Mo.

Champion Register Co., E. 70th St. & Colfax Rd., Cleveland, O. "Sale-O-Graph."

Egry Register Co., 417 Monument St., Dayton, O.

Globe Register Co., 2412-20 Reading Rd., Cincinnati, O.

Hamilton Autographic Register Co., Hamilton, O.

K. & B. Register Co., Symmes Ave., Hamilton, O.

Kant-Slip—See *Standard Register Co.*

McCaskey, Alliance, O.

National Cash Register Co., Dayton, O. (See page 699.)

Sale-O-Graph—See *Champion Register Co.*Shouperior—See *Autographic Register Co.*

Standard Register Co., 84 Albany Ave., Dayton, O. "Kant-Slip."

Uarco—See *United Autographic Register Co.*

United Autographic Register Co., 2216-40 W. 43d St., Chicago, Ill. "Uarco."

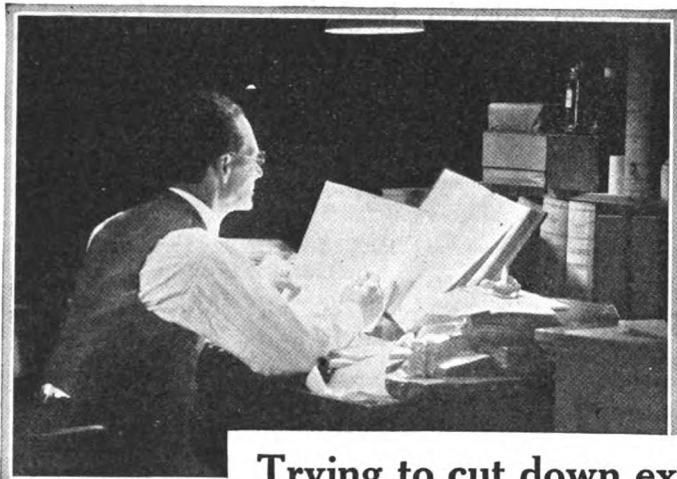
REGISTERS, MANIFOLD—See *Registers, Autographic***REGRINDING OF BALL BEARINGS—**See *Bearings, Ball, Reground***REGRINDING OF CYLINDERS—**See *Cylinders, Regrinding of***REGULATORS, Acetylene Pressure or Reducing Valves***(For use with acetylene lamps or starters; See also Controllers, Acetylene Lamp)*

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Prest-O-Lite Co., 30 E. 42d St., New York, N. Y.

REGULATORS, CARBURETOR, FOR FORDS—See *Regulators, Thermostatic Carburetor*

Everything is listed under the NOUN or principal word



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New business conditions have forced every merchant to face the problem of reducing expenses.

Thousands of merchants have solved the problem by using new model National Cash Registers.

These cash registers reduce costs of selling, delivery, and bookkeeping. They stop expensive leaks and losses. They also point the way to other economies by giving merchants, every day,

necessary business facts

- ① Sales made by each clerk.
- ② How goods are moving in each department.
- ③ Amount of capital tied up in outstanding accounts.
- ④ Volume and profit on credit business compared with volume and profit on cash business.
- ⑤ Total of money paid out.

These facts show how, when, where, and how much to reduce expenses.

A National Cash Register is the only machine that issues a receipt, indicates, adds, prints, classifies, and distributes records *at the time of the sale*, all in one operation. No figure work. No delays. No mistakes. Just read the totals.

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They pay for themselves out of part of what they save.

NATIONAL

CASH REGISTER COMPANY-DAYTON-OHIO

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REGULATORS, Electric Light, for Fords

(For controlling the flow of current to headlights to prevent burning out of bulbs at high engine speeds)

Ald Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 289.)

Amco—See Ald Mfg. Co.

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Brillite."

Aske Moore Corp., 19 Lake Ave., N., Duluth, Minn.

Banes & Muench, 70th Ave. & York Rd. (Oak Lane), Philadelphia, Pa.

Brillite—See American Automobile Accessories Co.

Burn Oil Device Co., 129 N. Jefferson St., Peoria, Ill.

Clamert Mfg. Co., Latrobe, Pa. (Sole Distributors for Tirrill Regulator Mfg. Co., Pittsburgh, Pa.)

Constolite—See Detroit Starter Co.

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Detroit Starter Co., 612 E. Jefferson St., Detroit, Mich. "Constolite."

Dimit—See Suburban Lighting & Gas Engine Co.

Double Lite Sales Co., 139 N. Jefferson St., Peoria, Ill.

Even-Lite Mfg. Co., 539 S. Third St., Paducah, Ky.

Evenlite—See Valley Electric Co.

Fodrectifier—See Warnerlite Products Corp.

Fracto, Inc., 161 Massachusetts Ave., Boston, Mass.

Jefferson Electric Mfg. Co., 426-30 S. Green St., Chicago, Ill.

Magnetat—See St. Cloud Electrical Mfg. Co. Morse, Frank W., 289 Congress St., Boston, Mass. (See page 221.)

Nitrolite Mfg. Co., 117 S. Grand Ave., Lansing, Mich.

Perrin Mfg. Co., 965 Woodward Ave., Detroit, Mich.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

St. Cloud Electrical Mfg. Co., St. Cloud, Minn. "Magnetat."

Suburban Lighting Co., Toledo, O. "Dimit."

Sunlight System Co., 14 E. Jackson Blvd., Chicago, Ill.

Tirrill Regulator Mfg. Co.—See Clamert Mfg. Co.

Valley Electric Co., 4919 Connecticut Ave., St. Louis, Mo.

Warnerlite Products Corp., Davenport, Iowa. "Fodrectifier."

Westphal, H. F., 3217 North Ave., Milwaukee, Wis.

Williams Mfg. Co., Clarksburg, W. Va. "Wilson."

Wilson—See Williams Mfg. Co.

REGULATORS, HEADLIGHT, FOR FORDS —See Regulators, Electric Light

REGULATORS, LIGHT, FOR FORDS—See Regulators, Electric Light

REGULATORS, PRESSURE—See Regu- lators, Acetylene Pressure; also Regu- lators, Tank Pressure

REGULATORS, STEAM PRESSURE—See Controllers, Vulcanizer Steam Pressure

REGULATORS, Tank Pressure

(For regulating the pressure on gasoline or oil tanks when pressure is taken from the exhaust)

Buckeye—See Central Brass & Fixture Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Imperial Brass Mfg. Co., 1324 W. Harrison St., Chicago, Ill. (See page 173.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

Messer Welding Supply Corp., 101-13 11th St., Brooklyn, N. Y.

REGULATORS, Thermostatic Car- buretor, for Fords

(Thermostatic attachment to automatically adjust carburetor needle for all changes in temperature)

B. & H. Sales Co., 431 S. Dearborn St., Chicago, Ill.

Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 933.)

REGULATORS, Water Circulating

(Thermostatic regulators for maintaining a constant temperature of the cooling water on gasoline cars; See also Shutters, Automatic Radiator. For hand-operated Regulators—See Valves, Water Circulation Regulating)

Benske & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield."

Fulton Co., Knoxville, Tenn. "Siphon." Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.

Rayfield—See Benske & Kropf Mfg. Co.

Siphon—See Fulton Co.

Tag—See Tagliabue Mfg. Co.

Tagliabue Mfg. Co., C. J., Bush Terminal Bldg., Brooklyn, N. Y. "Tag."

REGULATORS, Water Level

(For automatically maintaining the proper level of water in the boilers of steam cars)

Brookins Mfg. Co., Dayton, O.

REGULATORS, Window

(For opening and closing the windows in closed cars)

Clement—See Walker Body Co.

Cowles & Co., C., New Haven, Conn. "Fisher." (See page 451.)

Dura Mechanical Hardware Co., 2283-98 S. Albion Ave., Toledo, O.

Fisher—See Cowles & Co.

Henderson—See Kings Mfg. Co.

Kings Mfg. Co., 38 Park Row, New York, N. Y. "Henderson."

Liberty Works, Egg Harbor City, N. J. (See page 521.)

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Perfect Window Regulator Co., 20 Exchange Place, New York, N. Y.

Straight Line Regulator Corp., 794 Seventh Ave., New York, N. Y.

Ternstedt Mfg. Co., Detroit, Mich.

(See Back Cover.) Walker Body Co., Amesbury, Mass. "Clement."

RELEASE CLEVISSES—See Hitches, Auto- matic Tractor

RELEASES, AUTOMATIC CRANK, FOR FORDS—See Cranks, Safety Starting

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Automatic Extension Reels

For Electric Lamps

Pat. Jan. 30, 1917



Especially adapted for use in Manufacturing Plants, Garages, Machine Shops, etc., and a great convenience for adjustable extensions for portable electric drills, grinders, fans, etc. Equipped

with 25 ft. reinforced cord, lamp socket and guard. Attached to ceiling, beam or conduit. A swivel joining enables lamp to be carried in any direction from Reel, returning it automatically when not in use. An automatic lock holds the lamp at any desired distance from the reel.

Perfect insulation—stands test of an A. C. Potential of 1250 volts—only 250 volts required for lamp service. Safe—satisfactory—convenient—necessary.

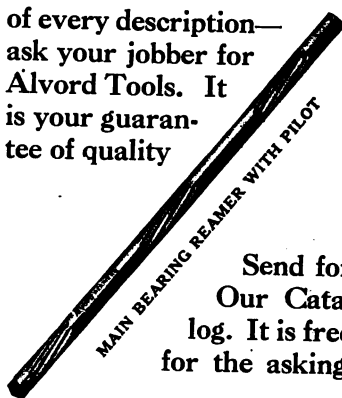
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of every description—ask your jobber for Alvord Tools. It is your guarantee of quality



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EXPANSION REAMER

THE Staff "Sure Mike" Improved

Critchley Type Six-Blade Expansion Reamer is so greatly superior in the work it does that it cannot be compared with other reamers in common use. The six blades are set staggered to prevent chattering and are firmly held in longitudinal grooves. Each reamer will expand to more than .010 above its listed maximum size, which allows considerable regrinding. Sizes 15-32 to 4 $\frac{1}{8}$ inches.

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We will replace or repair any Staff "Sure Mike" Expansion Reamer found defective in workmanship or materials.

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122 South Michigan Boulevard
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STAFF
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THE STANDARD WELDING CO.
Cleveland, Ohio

Division of The Standard Parts Company

Stanweld Rims

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RELEASERS, Clutch, for Fords

(For automatically releasing the clutch when the foot brake is applied)

Humbolt—See Republic Auto Parts Co.
 McEwen, R. A., Natoma, Kans.
 Metal Stamping Co., 13th St. & East Ave., Long Island City, N. Y. (See page 108.)
 Perkins-Campbell Co., Cincinnati, O. (See page 299.)
 Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Sterling."
 Sterling—See Republic Auto Parts Co.
 Zimmermann Mfg. Co., 247-51 W. Lincoln Way, Valparaiso, Ind.

RELEASERS, CRANK FOR FORDS—See Cranks, Safety Starting**RELIEF COCKS—See Cocks; also Cups, Spring Key****RELINERS, TIRE—See Shoes, Inner Tire****REMAGNETIZERS, MAGNET—See Chargers, Magneto Magnet****REMOVABLE RIMS—See Rims, Demountable****REMOVERS, BUSHING, FOR FORDS—See Extractors, Bushing****REMOVERS, Carbon**

(Chains or balls for use in cylinders to remove carbon; for Chemical Carbon Removers—See Compounds, Carbon Removing; for Oxygen Carbon Burners—See Machines, Engine Decarbonating; for Steam Carbon Removers—See Moisteners, Air or Mixture.)

Michener, E. S., 27 Market St., Brownsville Pa.
 Teepell, Edward A., 1523 N. 62d St., Philadelphia, Pa.

REMOVERS, ENAMEL—See Removers, Paint**REMOVERS, Paint, Enamel and Varnish**

Acme White Lead & Color Works, 8250 St. Aubin Ave., Detroit, Mich.
 Ad-El-ite—See Adams & Elting Co.
 Adams & Elting Co., 718-26 Washington Blvd., Chicago, Ill. "Ad-el-ite." (See page 267.)
 Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.
 Automotive Supply Mfg. Co., 2005 1/2 Main St., Dallas, Tex. "Cactus."
 Behlen & Bro. H., 371 Pearl St., New York, N. Y.
 Berry Bros., 211 Lieb St., Detroit, Mich.
 Bilchaco—See Billings-Chapin Co.
 Billings-Chapin Co., 1163 E. 40th St., Cleveland, O. "Bilchaco."
 Bradley & Vrooman Co., 2629 Dearborn St., Chicago, Ill. "Crown."
 Bridgeport Wood Finishing Co., New Milford, Conn.
 Cactus—See Automotive Supply Mfg. Co.
 Callery & Co., W. W., 188 36th St., Pittsburgh, Pa.

Chalmers Chemical Co., 115 Chestnut St., Newark, N. J. "Phenoid."
 Crown—See Bradley & Vrooman Co.
 Denegre Baked Enamel Remover Co., 1923-34 Ave. F, Birmingham, Ala.
 Detroit White Lead Works, 1960 Milwaukee Ave., E., Detroit, Mich. "Rogers Abluent."
 Du Pont de Nemours & Co., E. I. (Paint & Varnish Division), Wilmington, Del.
 Eberson-Lindsley Paint Co., 1830-32 Morgan St., St. Louis, Mo. "V. & P."
 Eclipse—See Gould & Cutler.
 Enterprise Paint Mfg. Co., Peoria & Van Buren Sts., Chicago, Ill. "Noxall."
 Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.
 Gillespie & Son, Chas. H., 19 Day St., Jersey City, N. J. "Monarch Bull Dog."
 Glidden Co., Cleveland, O.
 Gould & Cutler, 45 Sudbury St., Boston, Mass. "Eclipse."
 Idol-Yusso—See Schlegel Mfg. Co.
 Imp—See Rust-Off Mfg. Co.
 Indianapolis Paint & Color Co., 120-24 S. Illinois St., Indianapolis, Ind. "Rapid."
 Jewel—See Wadsworth-Howland Co.
 Klean-Itt—See Lawrence & Co.
 Lawrence & Co., W. W., Pittsburgh, Pa. "Klean-Itt."
 Lingerwett—See Wilson-Imperial Co.
 Lucas & Co., John, 322-30 Race St., Philadelphia, Pa. "Mirac."
 Mirac—See Lucas & Co.
 Monarch Bull Dog—See Gillespie & Son.
 Nice, Eugene B., 233-74 S. Second St., Philadelphia, Pa.
 Noxall—See Enterprise Paint Mfg. Co.
 Oakite—See Oakley Chemical Co.
 Oakley Chemical Co., 22 Thames St., New York, N. Y. "Oakite."
 Parrott Varnish Co., 453 N. Washington Ave., Bridgeport, Conn.
 Phenoid—See Chalmers Chemical Co.
 Quickwork—See Standard Varnish Works.
 Rapid—See Indianapolis Paint & Color Co.
 Rogers Abluent—See Detroit White Lead Works.
 Rust-Off Mfg. Co., 183 Northampton St., Buffalo, N. Y. "Imp."
 Sailors & Lamb Co., 7921 Woodland Ave., Cleveland, O. "Superior."
 Schlegel Mfg. Co., Oscar, 124 E. 13th St., New York, N. Y. "Idol-Yusso."
 Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
 Supremo—See Sailors & Lamb Co.
 V. & P.—See Eberson-Lindsley Paint Co.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Wilson-Imperial Co., 115 Chestnut St., Newark, N. J. "Wonderpaste," "Lingerwett."
 Wonderpaste—See Wilson-Imperial Co.

REMOVERS, PISTON RING—See Tools, Piston Ring**REMOVERS, TIRE—See Tools, Tire****REMOVERS, VARNISH—See Removers, Paint****REMOVING COMPOUNDS—See Compounds, Rust Preventing and Removing; also Compounds, Tar Removing; also Compounds, Carbon Removing; also Removers, Paint and Varnish**

Everything is listed under the NOUN or principal word

REMOVING TOOLS—See Tools, Valve Lifting and Spring Compressing; also Tools, Valve Cage Removing

REPAIR BRACKETS FOR FORDS—See Brackets or Supports, Engine Repair

REPAIR CLAMPS—See Clamps, Spring Repair

REPAIR CLAMPS, TRANSMISSION DRUM FOR FORDS—See Clamps or Visas, Transmission Drum Repair

REPAIR KNIVES—See Knives, Tire Repair

REPAIR LINKS—See Links, Tire Chain Repair

REPAIR PARTS—See Parts, Orphan Car Repair; also Parts, Speedometer Repair; also Parts, Storage Battery Repair; also Parts, Magneto, Coil and Distributor

REPAIR STANDS—See Stands, Motor Repair; also Stands, Rear Axle Repair; also Stands, Radiator Repair

REPAIR SUPPORTS FOR FORDS—See Brackets or Supports, Engine Repair

REPAIR TRUCKS—See Creepers, Repair

REPAIRERS, SPRING—See Clamps, Spring Repair

REPAIRERS, IGNITION AND STARTER—See Stations, Electric Service

REPAIRING OF SCORED CYLINDERS—See Cylinders, Scored, Repairing of

REPORTS, Used Car Market

Chicago Auto Trade Association, 2508 S. Michigan Ave., Chicago, Ill.
(See page 51.)

RESEATERS, VALVE—See Tools, Valve Reseating

RESERVE COCKS—See Valves, Two Way Tank

RESERVE COCKS FOR FORDS—See Cocks, Fuel Supply

RESERVE TANKS—See Tanks, Emergency or Reserve

RESERVE VALVES—See Valves, Two Way Tank

RESERVE VALVES FOR FORDS—See Cocks, Fuel Supply and Reserve

RESTS, Arm for Fords

Eee Zee Arm Rest Co., 470-72 Ellicott Sq., Buffalo, N. Y.

RESTS, BACK—See Rests, Cushion

RESTS, Bow

(See also Holders, Top; also Separators, Bow)

Anchor—See North & Judd Mfg. Co.

Attwood Brass Works, Grand Rapids, Mich. (See page 147.)

Bantlin Co., Julius J., Cincinnati, O. "Hoover."

Brewer Tichener Corp., Cortland, N. Y.

Campbell—See Perkins-Campbell Co.

Desoco—See Detroit Socket Co.

Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."

Hoover—See Bantlin Co.

Jonah & George, Little's Ct., Merrimac, Mass.

North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."

Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)

Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

RESTS, Cushion Back

(Special removable cushions for back rests for drivers seats)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.

Accurate Cover Co., 373 Canal St., New York, N. Y.

Angelus—See Parker & Waterman Mfg. Co.

Apco—See Atlantic-Pacific Mfg. Corp.

Atlantic-Pacific Mfg. Corp., 129 Atlantic Ave., Brooklyn, N. Y. "Apco." (See page 579.)

Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)

Auto Cape Top Co., 2334-38 S. Michigan Ave., Chicago, Ill.

Automobile Apparel Co., Bush Ave., Port Chester, N. Y.

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Eezback." (See page 299.)

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."

Bantlin Co., Julius J., Cincinnati, O.

Buob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 595.)

Busse & Co., W. A., 2700 W. Lake St., Chicago, Ill.

Campbell—See Perkins-Campbell Co.

Casco—See Cincinnati Auto Specialty Co.

Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Casco."

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Texas.

Co-Zee—See Omaha Auto Top Co.

Columbus Upholstery Supply Co., 112 N. Third St., Columbus, O.

Comfo Lux Cushion Co., Claus Bldg., Ottawa, Ill.

Comfy—See Niagara Fabric Mfg. Co.

Detko Products Co., 555 Turk St., San Francisco, Cal.

Dunham Co., Thos., Aurora, Ill. (See page 145.)

E-Z—See Tower & Co.

Easybak—See Holden Mfg. Co.

Economy Seat Co., 3123-35 S. Canal St., Chicago, Ill. "Esco E-Z."

Eezback—See B. E. Mfg. Co.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Esco E-Z—See Economy Seat Co.

Fitwell—See Bailey-Fitwell Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.

Gilbert Mfg. Co., 353 York St., New Haven, Conn.

Everything is listed under the NOUN or principal word

RESTS, Cushion Back (Continued)

Gordon Co., J. P., 555 N. Fourth St., Columbus, Ohio.
 Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Komfy."
 Holden Mfg. Co., 409 N. Franklin Ave., St. Paul, Minn. "Easybak."
 Jenks & Muir Mfg. Co., 6441 Hastings St., Detroit, Mich.
 Komfy—See Hodes-Zink Mfg. Co.
 Martin Auto Specialty Co., 317 Forest Rose Ave., Lancaster, O.
 Mesinger Mfg. Co., H. & F. Austin Pl. & E. 144th St., New York, N. Y.
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
 Niagara Fabric Mfg. Co., 47 Green St., New York, N. Y. "Fitzwell." "Comfy."
 Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)
 Parker & Waterman Mfg. Co., 1203 W. Washington St., Los Angeles, Cal. "Angelus."
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)
 Povers Mfg. Co., Waterloo, Ia. (See page 530.)
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
 Sterling Top & Equipment Co., 518-22 W. 57th Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.
 Tower & Co., Cohasset, Mass. "E-Z."

RESTS, Cushion Back, for Fords

(Special cushions to apply to top of seat back to increase height of back cushion)

Angelus—See Parker & Waterman Mfg. Co.
 Apco—See Atlantic-Pacific Mfg. Corp.
 Atlantic-Pacific Mfg. Corp., 129 Atlantic Ave., Brooklyn, N. Y. "Apco." (See page 579.)
 Copp Co., Geo. W., 200-14 14th St., Long Island City, N. Y. (See page 123.)
 Co-Zee—See Omaha Auto Top Co.
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.
 Gordon Co., J. P., 555 N. Fourth St., Columbus, Ohio.
 Metropolitan Air Goods Co., Marble St., Athol, Mass.
 Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)
 Parker & Waterman Mfg. Co., 1203 W. Washington St., Los Angeles, Cal. "Angelus."
 Ustus Products Co., 4042 W. Jefferson St., Detroit, Mich.
 Wood Co., W. C., Sixth Ave. S. E. & University Ave., Minneapolis, Minn.

RESTS, FOOT—See Rests or Rails, Foot**RESTS, Heel**

(For rendering operation of clutch or accelerator pedals easier and less tiresome)

Auto Pedal Co., 318-20 W. 52d St., New York, N. Y.
 Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
 Beedee Distributing Service, 613 W. Pico St., Los Angeles, Cal. (Sole Distributors for De Luxe Auto Mfg. Co., Los Angeles, Cal.)
 Bloom Auto Specialty Co., 18 Charlotte St., Tiffin, O. "Resto."
 Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)
 De Luxe Auto Mfg. Co.—See Beedee Distributing Service.
 E-Z—See Henderson-Cloud Co.
 E-Z Accelerator Foot Rest Co., 2320 Quatmar Ave., Norwood, O.

Henderson-Cloud Co., 1032 S. Grand Ave., Los Angeles, Cal. "E-Z."
 Hicks Mfg. Corp., 7508-12 Saginaw Ave., Chicago, Ill.
 Hon—See Williams Bros. Aircraft Co.
 Honeyman Co.—See Williams Bros. Aircraft Co.
 Humboldt—See Republic Auto Parts Co.
 Lucas & Son, J. L., 3 Fox St., Bridgeport, Conn.
 Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich.
 Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass. (See page 809.)
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Resto—See Bloom Auto Specialty Co.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."
 Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill.
 Star Aluminum Foundry, 3619-21 18th St., San Francisco, Cal.
 Sterling—See Republic Auto Parts Co.
 Uniq—See Spiro Mfg. Co.
 Wagner Mfg. Co., E. R., North Milwaukee, Wis.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)
 Williams Bros. Aircraft Corp., San Francisco, Cal. (Sole Distributors for Honeyman Co., W. A., San Francisco, Cal., "Hon.") (See page 71.)

RESTS, Heel, for Fords

Lucas & Son, J. L., 3 Fox St., Bridgeport, Conn.
 Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich.

RESTS or RAILS, Foot

(See also Hascocks; For heated foot rests—See Heaters, Automobile)

Aetna Brass & Bronze Co., 1681-85 E. 55th St., Cleveland, O.
 Allen Fire Department Supply Co., Providence, R. I.
 Amesbury Brass & Foundry Co., Amesbury, Mass.
 Attwood Brass Works, Grand Rapids, Mich. (See page 147.)
 Auto Brass Mfg. Co., 3514-20 S. Michigan Ave., Chicago, Ill.
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O.
 Columbus Auto Parts Co., 215 E. Russell St., Columbus, O.
 Columbus Brass Co., 540 Dublin Ave., Columbus, O.
 Cowles & Co., C., New Haven, Conn. (See page 451.)
 Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Hurt & Co., B. J., Dayton, O. (Sales Representatives for Thomson Mfg. Co., S. H., Dayton, O.)
 Imperial Brass Mfg. Co., 1284 W. Harrison St., Chicago, Ill. (See page 173.)

Everything is listed under the NOUN or principal word

RESTS or RAILS, Foot (Continued)

Jonah & George, Little's Ct., Merrimac, Mass.
Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Meyer Scale & Hardware Co., 328 Adams St., Newark, N. J.

Moline Iron Works, 328 Second St., Moline, Ill.
Monarch Carriage Goods Co., Marshall & Spring Grove Ave., Cincinnati, Ohio.
(See page 929.)

Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass.
(See page 869.)

Rich Mfg. Co., 69-71 Greene St., New York, N. Y. "Rico."

Rico—See Rich Mfg. Co.

Rostand Mfg. Co., Milford, Conn.

Sargent Mfg. Co., New & Summit Sts., Newark, N. J.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y.

Thomson Mfg. Co.—See Hunt & Co.

Wagner Mfg. Co., E. R., North Milwaukee, Wis.

Waterhouse & Freeman Mfg. Co., 319 N. J. R. R. Ave., Newark, N. J.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
(See page 471.)

Whitehouse Mfg. Co., E. A. 42-54 Elm St., Newark, N. J. (See page 174.)

Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 595.)

RESTS or RAILS, Foot, for Fords

(For heated rails—See Heaters, Automobile)

Attwood Brass Works, Grand Rapids, Mich. (See page 147.)

Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y.

Sterling—See Republic Auto Parts Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
(See page 471.)

RETAINERS, Ball

Bearings Co. of America, Lancaster, Pa. "Star." (See page 102.)

Bossert Corp., Utica, N. Y.

Goodrich-Lenhart Mfg. Co., Hamburg, Pa.
(See page 933.)

National Bearings Co., 637 Lancaster Ave., Lancaster, Pa.

S-W-S Co., Minneapolis, Minn.
(See page 431.)

Star—See Bearings Co. of America.

Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)

RETAINERS, BELT, FOR FORDS—See Guides, Fan Belt**RETAINERS, FAN BELT, FOR FORDS—See Guides, Fan Belt****RETAINERS, GREASE, FOR FORDS—See Retainers, Rear Axle Grease****RETAINERS, Rear Axle Grease, for Fords**

(For preventing leakage of grease from rear axle on to brakes, wheels or tires)

C. & M.—See Cantrell-Miller Machine Works.
Cantrell-Miller Machine Works, 1246-54 Larkin St., San Francisco, Cal. "C. & M."

H. & D. Co., Crawfordsville, Ind.

Korex Mfg. Co., 423 Larkin St., San Francisco, Cal.

Macorvey Co., Wabash Bldg., Pittsburgh, Pa. "R. & R."

Perfection Machine Co., Jeromeville, O.

R. & R.—See Macorvey Co.

Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."

Star-K—See Stark-Inland Machine Works.
Worthington, A. F., 700 N. Main St., Los Angeles, Cal.

RETAINING RINGS—See Fillers, Tire Bead**RETARDERS, Automatic Spark, for Fords**

(Devices to automatically retard spark when starting crank is engaged or to prevent engagement of crank until spark has been retarded)

Kant Klek Spark Set Co., Elkhorn, Wis.

Safety Spark Set Co., Elkhorn, Wis.

RETHREADING TOOLS—See Tools, Tire Valve Rethreading**REVERSE BAND ADJUSTERS FOR FORDS—See Adjusters, Brake and Reverse Band****REVERSE CURRENT CUTOUTS—See Cutouts, Reverse Current****RHEOSTATS, Battery Charging**

Allen-Bradley Co., 224 Greenfield Ave., Milwaukee, Wis.

Cutler Hammer Mfg. Co., 290 St. Paul Ave., Milwaukee, Wis.

Electric Products Co., Cleveland, O.

F. F.—See France Mfg. Co.

France Mfg. Co., 10325 Berea Rd., Cleveland, O. "F. F."

General Electric Co., Schenectady, N. Y.
(See page 697.)

H-B—See Hebert Bros. Co.

Hobart Bros. Co., Troy, O. "H-B."

I-C—See Industrial Controller Co.

Industrial Controller Co., 386 Greenbush St., Milwaukee, Wis. "I-C."

Leonard Electric Co., Ward, Mt. Vernon, N. Y.

National Electric Controller Co., 154-56 Whiting St., Chicago, Ill.

Schaefer Bros., 1059 W. 11th St., Chicago, Ill.

Shonts Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (Dealers.)
(See page 151.)

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

RIM ANVILS—See Anvils, Rim**RIM APPLYING PRESSES—See Presses, Truck Rim Applying**

Everything is listed under the NOUN or principal word

RIM BOLTS—See Bolts, Special Demountable Rim

RIM CONTRACTING TOOLS—See Tools, Demountable Rim Contracting

RIM COVERS—See Covers, Cork Pulley Rim

RIM ENAMELS—See Paints, Rim; also Paints, Aluminum and Bronze

RIM EXPANDERS—See Tools, Demountable Rim Contracting

RIM PAINTS—See Paints, Rim

RIM PARTS—See Parts, Rim

RIM SHIMS—See Plates, Demountable Rim Wedge

RIM REMOVING TOOLS—See Tools, Demountable Rim Contracting

RIM SPREADERS—See Tools, Demountable Rim Contracting

RIM STRAIGHTENING TOOLS—See Tools, Rim Straightening

RIM TOOLS—See Tools, Demountable Rim Contracting

RIM WEDGE PLATES—See Plates, Demountable Rim Wedge

RIMS, Demountable

Baker—See Stone Mfg. Co.
Cleveland Welding & Mfg. Co. of the Hydraulic Steel Co., Cleveland, O. "Goodyear."
Collapse—See Mid-West Appliance Co.
Colton Demountable Rim Corp., 23 Water St., New York, N. Y.
Copithorn—See Seymour Corp.
Dahl Punctureless Filler & Rim Co., 1424-26 Hennepin Ave., Minneapolis, Minn.
Dressel Collapsible Rim Mfg. Co., 5156-58 Delmar Ave., St. Louis, Mo.
Du Bois Machine Shop, 118-28 Hudson Ave., Albany, N. Y.
Firestone Steel Products Co., Miller St. & Swetzer Ave., Akron, Ohio.
Goodyear—See Cleveland Welding & Mfg. Co.
Howard Demountable Rim Co., 1850 E. State St., Trenton, N. J.
Jaxon Steel Products Co., Jackson, Mich.
Johnston—See United Rim Co.
Johnson Rim & Parts Co., 3519 Delaware Ave., Buffalo, N. Y.
Kelsey Wheel Co., Detroit, Mich.
(See page 953.)
Lightning Change Rim Co., Masonic Temple, Chicago, Ill.
Michelin Tire Co., Milltown, N. J.
Michon Mfg. Co., 124 N. Erie St., Toledo, O.
Mid-West Appliance Co., 1255 S. Wabash Ave., Chicago, Ill. "Collapseo."
Motorcraft Engineering Co., 2270 Franklin St., Detroit, Mich. (See page 731.)
Mott Wheel Works, Jackson, Mich. "R-M."
National Collapsible Rim Corp., 152 W. 42d St., New York, N. Y.
Oliver Rim Co., Atlanta, Ga.
Parker—See Union Steel Products Co.

Presto Inter-Rim Co., 940 Commonwealth Ave., Boston, Mass.

Quick Change Auto Rim Co., 439 E. Fort St., Detroit Mich. "Q. C. A. R."
(See page 320.)

Q. C. A. R.—See Quick Change Auto Rim Co.

R-M—See Mott Wheel Works.

Seymour Corp., C. K., 80 Boylston St., Boston, Mass. "Copithorn."

Standard Rim Corp., 1482 Broadway, New York, N. Y.

Standard Parts Co., Cleveland, O. "Stanweld." (See pages 85, 119, 701 and 798.)

Stanweld—See Standard Parts Co.

Stone Mfg. Co., Chicago, Ill. "Baker."
(See page 707.)

Union Steel Products Co., Berrien & Pine Sts., Albion, Mich. "Farker."

United Rim Co., Glendive, Mont. "Johnston."

RIMS, Demountable, for Fords

Baker—See Stone Mfg. Co.
Dressed Collapsible Rim Mfg. Co., 5156-58 Delmar Ave., St. Louis, Mo.
Howard Demountable Rim Co., 1850 E. State St., Trenton, N. J.
Johnson Rim & Parts Co., 3519 Delaware Ave., Buffalo, N. Y.
Lane Bros. Mfg. Co., Shelburne, Ind. "Mint-Chan."
Mint-Chan—See Lane Bros. Mfg. Co.
National Collapsible Rim Corp., 152 W. 42d St., New York, N. Y.
S. I.—See Stone Mfg. Co.
Stone Mfg. Co., Chicago, Ill. "Baker."
(See page 707.)

RIMS, DETACHABLE—See Rims, Quick Detachable

RIMS, Emergency, for Fords

Twin-Rim Co., Everett, Mass.

RIMS, Quick Detachable

Caterpillar Mfg. Co., 608 S. Dearborn St., Chicago, Ill. "Kwick Change."
(See page 665.)
Collapsible Rim Corp., Asheville, N. C.
Cleveland Welding & Mfg. Co. of The Hydraulic Steel Co., Cleveland, O. "Goodyear."
Daly Mfg. Co., 1027-29 Santa Fe Ave., Los Angeles, Cal. "Simplex." (See page 731.)
Federal Detachable Rim & Wheel Mfg. Corp., Syracuse, N. Y.
Goodyear—See Cleveland Welding & Mfg. Co.
Johnson Rim & Parts Co., 3519 Delaware Ave., Buffalo, N. Y.
Kelsey Wheel Co., Detroit, Mich.
(See page 953.)
Kwick Change—See Caterpillar Mfg. Co.
Motorcraft Engineering Co., 2270 Franklin St., Detroit, Mich. (See page 731.)
Mott Wheel Works, Jackson, Mich.
Quick & Easy—See Wheel & Rim Works Corp.
Simplex—See Daly Mfg. Co.
Stanweld—See Standard Parts Co.
Standard Parts Co., Cleveland, O. "Stanweld." (See pages 85, 119, 701 and 798.)
Wheel & Rim Works Corp., 110 S. Dearborn St., Chicago, Ill. "Quick & Easy."

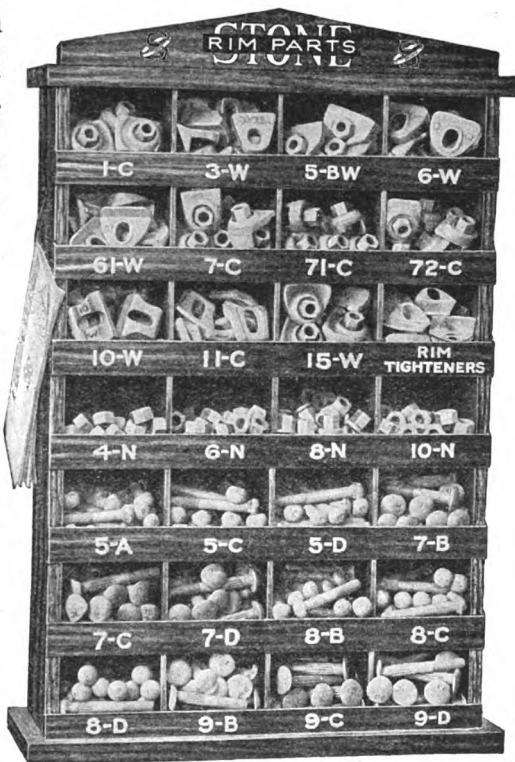
Everything is listed under the NOUN or principal word

Stone Rim Repair Parts

are carried in stock and sold by all leading jobbers in the United States and Canada.

It is their endorsement, and your guarantee of a high standard of service.

Stone Rim Repair Parts are packed in the most approved method for merchandising—one dozen in each carton—or



Cabinet with
Assortment No. 1:
28 Items
Totaling 228 Parts

Cabinet with
Assortment No. 2:
28 Items
Totaling 336 Parts

Write us or your Jobber for Full Details

THE STONE MANUFACTURING CO.
CHICAGO, ILLINOIS

Please mention The Automobile Trade Directory

RIMS, REMOVABLE—See Rims, Demountable

RIMS, Rubber or Composition Steering Wheel

(For complete steering wheels—See Wheels, Steering)

General Insulate Co., 1008 Atlantic Ave., Brooklyn, N. Y.

Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.

Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

RIMS, Standard

Kelsey Wheel Co., Detroit, Mich.
(See page 953.)

Motorcraft Engineering Co., 2270 Franklin St., Detroit, Mich. (See page 731.)

Mott Wheel Works, Jackson, Mich.

S. I.—See Stone Mfg. Co.

Standard Parts Co., Cleveland, O. "Stanweld." (See pages 85, 119, 701 and 795.)

Stanweld—See Standard Parts Co.

Stone Mfg. Co., Chicago, Ill. "S. I."
(See page 707.)

Williams Steel Wheel & Rim Co., Pleasant St. & N. Y., O. & S. W. R. R., Utica, N. Y.

RIMS, STEERING WHEEL—See Rims, Rubber Steering Wheel; also Rims, Wood Steering Wheel

RIMS, TRACTION—See Bands, Non-Skid Truck

RIMS, Wood Steering Wheel

(For complete steering wheels—See Wheels, Steering)

Allerding Products Co., 209 N. Main St., Mansfield, O.

American Wood Rim Co., Onaway, Mich.
(See page 965.)

Haberkorn & Co., C. H., 1331 W. Elizabeth St., Detroit, Mich.

K. & S. Mfg. Co., 2544 S. Western Ave., Chicago, Ill.

La Pierre & Co., H. M. (Dudie), 1314-16 W. 21st St., Chicago, Ill.

Rastetter & Sons, Louis, Nelson & Wall Sts., Fort Wayne, Ind.

Wayne Steering Wheel & Bow Co., Wayne, Mich.

RIMS or Felloes, Wood

Campbell & Dann Mfg. Co., Tullahoma, Tenn.

Columbus Bending Co., Columbus, O.

Crane & MacMahon, St. Marys, O. "Nut," "Star."

Eberly & Orris Mfg. Co., Mechanicsburg, Pa.

Empire—See Skeens Empire Bending Works.

Hartwell Handle Co., 146th & Lincoln Sts., Harvey, Ill.

Jones & Co., Phineas, 305 Market St., Newark, N. J.

Lebzelter & Son Co., Phillip, 241 N. Queen St., Lancaster, Pa.

Nut—See Crane & MacMahon.

Skeens Empire Bending Works, 114 S. Christian St., Lancaster, Pa. "Empire."

Skinner Bending Co., J. M., Broadway & Wabash R. R., Toledo, O.

Star—See Crane & MacMahon.

Stoll Bros., 545-47 N. Market St., Lancaster, Pa.

RING GAGES—See Gages, Plug and Ring

RING GEARS—See Gears, Steel Ring

RING GRINDERS—See Grinders, Piston Ring

RING GROOVE CLEANING TOOLS—See Tools, Piston Ring Groove Cleaning.

RING MACHINES, AUTOMATIC—See Machines, Automatic Piston and Ring

RING TOOLS—See Tools, Piston Ring

RINGS, DUST—See Washers, Felt

RINGS, Piston

(See also Machine Work; also Cylinders, Regrinding of)

A. C. Non-Leakable Piston Ring Co., Comp ton, Ill.

Acme—See Kauffman Engineering Co.

Albertson & Co., (Springdale) Sioux City, Ia. "Sioux."

Amelung Mfg. Co., A. F., First St., Sanborn, Ia. "Can't Leak."

American Distributing Co., Union Bldg., Cleveland, O. (Sole Distributors for American Metal Parts Corp., Boston, Mass. "Precision.")

American Engine & Airplane Co., 2809 W. Pico St., Los Angeles, Cal.
(See page 635.)

American Hammered Piston Ring Co., Baltimore, Md. (See pages 712 and 713.)

American Metal Parts Corp.—See American Distributing Co.

American Piston Co., Bowling Green, O. "Tapco."

Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.

Automotive Piston Ring Co., 4510 Manchester Ave., St. Louis, Mo. "Power King." (See page 718.)

Bear-Tite—See Foster, Merriam & Co.

Blettner, Geo. H., 1401-05 Jackson Blvd., Chicago, Ill.

Bridgeport Piston Ring Co., Connecticut Ave. & Third St., Bridgeport, Conn.

Bu-Nite—See Butler Mfg. Co.

Buffalo Cylinder Grinding Co., 889 Main St., Buffalo, N. Y.

Burd High Compression Ring Co., Rockford, Ill. (See pages 715 and 727.)

Butler Mfg. Co., 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."

Can't Leak—See Amelung Mfg. Co.

Carbon-O—See Steam Tractor Auto Mfg. Co.

Carpenter & Jackson, 1227 S. Olive St., Los Angeles, Cal. "Sav-oil."

Chance Co., Centralia, Mo. "Gas-Tite."

Chopa Piston Ring Co., 404-06 E. Jefferson Ave., Detroit, Mich.

Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill.

Club Auto Parts & Machine Co., 204-06 Chester St., Buffalo, N. Y.

Everything is listed under the NOUN or principal word

Gill

One-piece Piston Rings



*in more than 11,000 sizes
and over-sizes*

There is a Gill One-piece Piston Ring in every size and over-size to fit every make and model of motor. And no matter *when* or *where* Gill Piston Rings are wanted they can be secured in 24 hours, for there are more than 2,500 stocks of Gill One-piece Piston Rings in the country.

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BROWN ENGINEERING CORPORATION, Limited
Toronto, Ontario

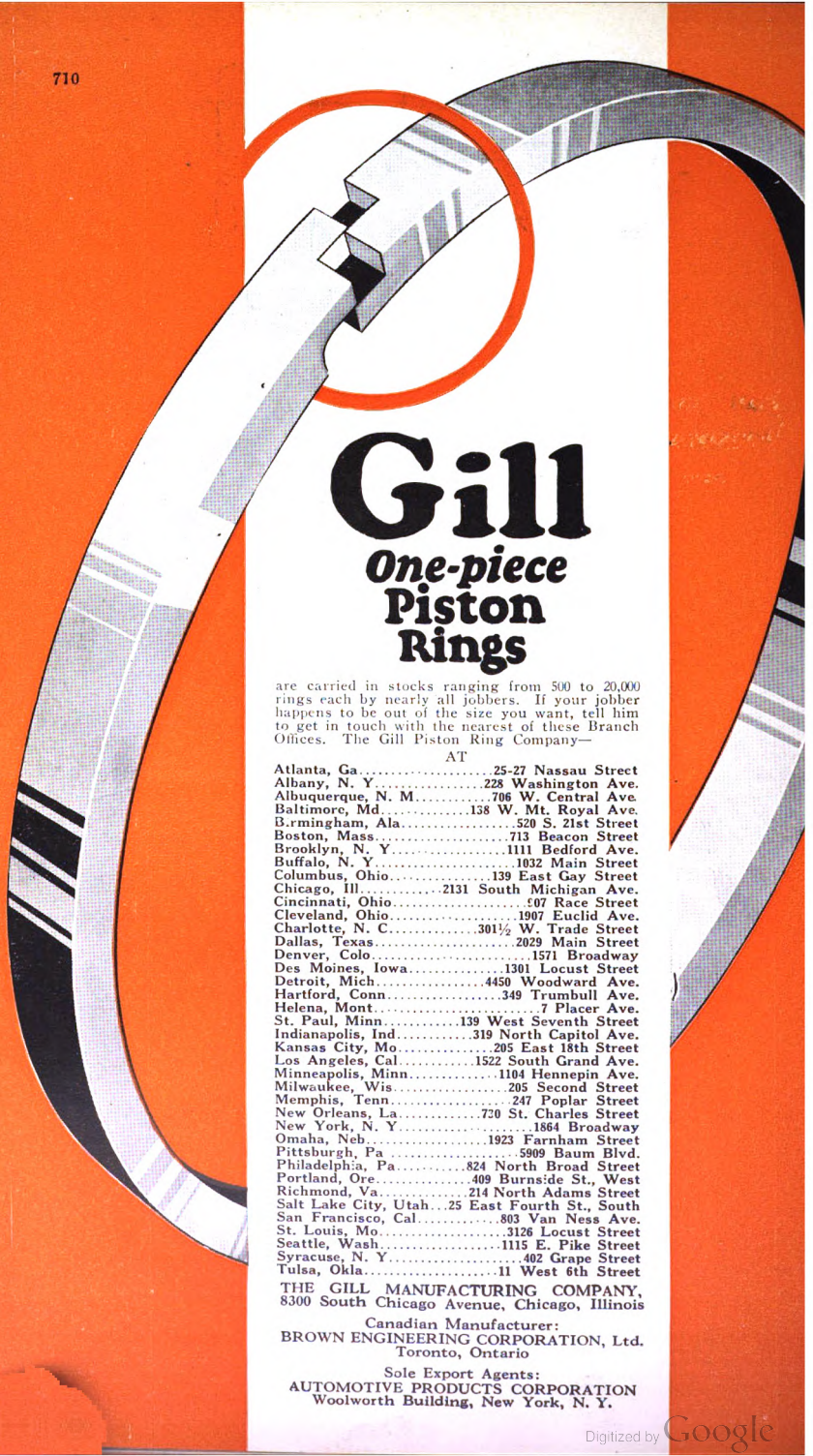
Sole Export Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

*Identify the Gill
One-piece Piston
Ring by the joint,
but do not meas-
ure its merit by
the joint alone.*



39 Branch Offices prepared to give practically 24-hour service to the entire trade. Whenever possible, however, dealers should order through their jobbers.





Gill

One-piece Piston Rings

are carried in stocks ranging from 500 to 20,000 rings each by nearly all jobbers. If your jobber happens to be out of the size you want, tell him to get in touch with the nearest of these Branch Offices. The Gill Piston Ring Company—

AT

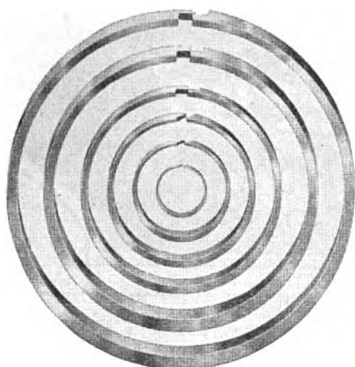
Atlanta, Ga.	25-27 Nassau Street
Albany, N. Y.	228 Washington Ave.
Albuquerque, N. M.	706 W. Central Ave.
Baltimore, Md.	138 W. Mt. Royal Ave.
Birmingham, Ala.	520 S. 21st Street
Boston, Mass.	713 Beacon Street
Brooklyn, N. Y.	1111 Bedford Ave.
Buffalo, N. Y.	1032 Main Street
Columbus, Ohio	139 East Gay Street
Chicago, Ill.	2131 South Michigan Ave.
Cincinnati, Ohio	507 Race Street
Cleveland, Ohio	1907 Euclid Ave.
Charlotte, N. C.	301½ W. Trade Street
Dallas, Texas	2029 Main Street
Denver, Colo.	1571 Broadway
Des Moines, Iowa	1301 Locust Street
Detroit, Mich.	4450 Woodward Ave.
Hartford, Conn.	349 Trumbull Ave.
Helena, Mont.	7 Placer Ave.
St. Paul, Minn.	139 West Seventh Street
Indianapolis, Ind.	319 North Capitol Ave.
Kansas City, Mo.	205 East 18th Street
Los Angeles, Cal.	1522 South Grand Ave.
Minneapolis, Minn.	1104 Hennepin Ave.
Milwaukee, Wis.	205 Second Street
Memphis, Tenn.	247 Poplar Street
New Orleans, La.	730 St. Charles Street
New York, N. Y.	1864 Broadway
Omaha, Neb.	1923 Farnham Street
Pittsburgh, Pa.	5909 Baum Blvd.
Philadelphia, Pa.	824 North Broad Street
Portland, Ore.	409 Burnside St., West
Richmond, Va.	214 North Adams Street
Salt Lake City, Utah	25 East Fourth St., South
San Francisco, Cal.	803 Van Ness Ave.
St. Louis, Mo.	3126 Locust Street
Seattle, Wash.	1115 E. Pike Street
Syracuse, N. Y.	402 Grape Street
Tulsa, Okla.	11 West 6th Street

THE GILL MANUFACTURING COMPANY,
8300 South Chicago Avenue, Chicago, Illinois

Canadian Manufacturer:
BROWN ENGINEERING CORPORATION, Ltd.
Toronto, Ontario

Sole Export Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

Prescott Piston Rings



Individually cast in our own Foundry from
Iron of Correct Analysis
Machine work of Highest Order
Very large Capacity

Wide variety of Standard and Oversize Rings
always in stock for immediate delivery to
Jobbing Trade

Manufactured by

Prescott Auto Parts Co., Webster, Mass.



WHETHER shipped from stock or built to your specifications—each EFEMCO Piston Ring is individually cast.

The high quality of the iron used is the direct result of our eighty-six years of foundry Practice.

Let us quote on your requirements.

FOSTER, MERRIAM AND CO.

MERIDEN, CONNECTICUT U.S.A.

Efemco Products

Automobile Accessories
Grey Iron Castings
Piston Rings



Standardized by
86 years of service

SPECIAL TEST PISTON RINGS

are the highest grade rings offered the jobbing trade regardless of price. They will perform their work better than any so called patent rings could be expected to do.

They are sold at a fair price under a proper merchandising policy.

Write us today.



The Perfection Piston Ring Company
RAVENNA, OHIO

Please mention The Automobile Trade Directory

American Hammered Piston Rings

INDIVIDUALLY CAST AND TESTED—From special mixture of close grained gray iron, accurately tested, assuring uniform metal in every ring.

ONE PIECE—Easily installed—and not subject to the high breakage of multiple piece rings.

CONCENTRIC—An equal wall thickness at all points of the circumference allows the ring to fill the piston groove and leave no pocket behind the ring for oil accumulation and carbon deposits.

LEAKLESS—Accurately machined to fit the piston groove and cylinder—American Hammered Piston Rings are leakless. The tension, hammered into the rings uniformly, keeps them leakless. Heat from the motor does not affect American Hammered Piston Rings.

OVERSIZE—No extra charge for oversize rings. In ordering always give the diameter and width of rings wanted.

SEALED CONTAINER—Every ring is sealed in a moisture proof envelope, 12 to a box. The box is also sealed, giving a double assurance that every ring will be received in good condition.

★ **SPECIAL FOR FORDS**—American Hammered Piston Rings, made to fit the deep grooves in a Ford piston, are held to the same rigid specifications as those used as factory equipment for Pierce-Arrow, Mercer, Stutz, and other of the more expensive cars. In ordering these special rings, please specify "for Fords."

FOR ALL MOTORS—American Hammered Piston Rings for all makes and sizes of motorcycle, automobile, truck, tractor, marine and stationary engines, supplied on your order. Rings for replacement are subject to the same rigid inspection as those furnished to the highest class of motor manufacturers as factory equipment.

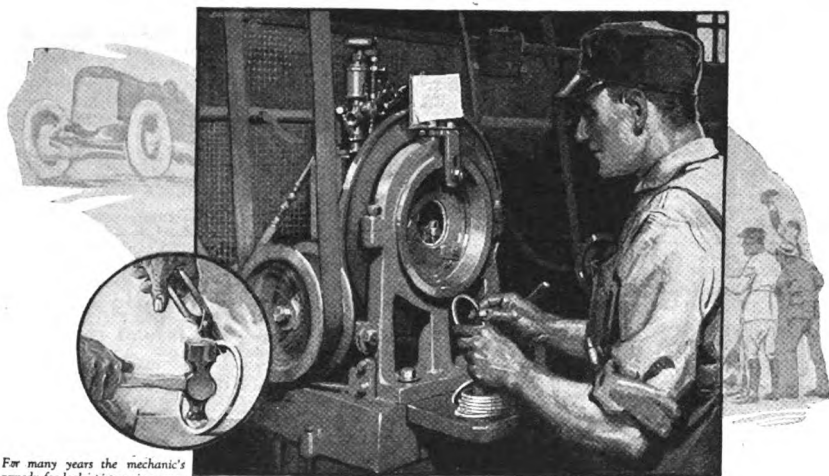


American Hammered
Piston Ring Company
Baltimore, Maryland

List Price

DIAMETER	Width		
	$\frac{1}{8}$ "	$\frac{1}{4}$ "	$\frac{3}{8}$ "
Also 5, 10, 20, 30 and 60 thousandths oversize in diameter	Also widths of $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " when specified.		
$2\frac{1}{2}$ " $2\frac{3}{8}$ " $2\frac{1}{2}$ " $2\frac{1}{8}$ " $2\frac{1}{2}$ " 3" $3\frac{1}{8}$ " $3\frac{1}{2}$ " $3\frac{3}{8}$ " $3\frac{1}{2}$ " $3\frac{3}{8}$ " $3\frac{1}{2}$ " $3\frac{3}{8}$ " $3\frac{1}{2}$ " ★ $3\frac{3}{4}$ " $3\frac{3}{8}$ "	\$1.00		
	$\frac{1}{4}$ " (Special wall thickness .136"—150") FORD		
4" $4\frac{1}{8}$ " $4\frac{1}{2}$ " $4\frac{3}{8}$ " $4\frac{1}{2}$ " $4\frac{3}{8}$ " $4\frac{1}{2}$ " $4\frac{3}{8}$ " $4\frac{1}{2}$ "	\$1.25		
5" $5\frac{1}{8}$ " $5\frac{1}{2}$ " $5\frac{3}{8}$ " $5\frac{1}{2}$ " $5\frac{3}{8}$ " $5\frac{1}{2}$ " $5\frac{3}{8}$ "	\$1.50		
6" $6\frac{1}{8}$ " $6\frac{1}{2}$ " $6\frac{3}{8}$ " $6\frac{1}{2}$ " $6\frac{3}{8}$ " $6\frac{1}{2}$ " $6\frac{3}{8}$ "	\$2.25		
7" $7\frac{1}{8}$ " $7\frac{1}{2}$ " $7\frac{3}{8}$ " 8"	\$2.75		
No extra charge for oversize rings.			
★ For Fords			
\$9.00			
Per Set of 12			

Please mention The Automobile Trade Directory



For many years the mechanic's remedy for leaky piston rings was to "peen" (hammer) them by hand. Our rings are hammered in automatic machines with that precision which makes them leakless—permanently.

Why Hammered?

Because:

- it is the one best way to make a piston ring *leakless—permanently.*
- it reduces the loss of gas and oil and increases motor efficiency.

American Hammered Piston Rings, accurately machined and automatically hammered, increase power and reduce operating costs—they make *satisfied customers.*

For quick turnover and satisfactory piston ring profits

Ask Your Jobber

**American
Hammered
Piston Rings**

AMERICAN HAMMERED PISTON RING COMPANY, Baltimore, Md.
Export Department: 461 Eighth Ave., New York, U. S. A.



Please mention The Automobile Trade Directory

RINGS, Piston (Continued)

- Commerce Steel Products Co., 721 Otis Bldg., Chicago, Ill.
- Continental Piston Ring Co., 648-50 Marshall Ave., Memphis, Tenn. "Hi-Comp," "Hi-Speed."
- Creech Piston Ring Co., 109 Union St., Jackson, Mich.
- Davidson Multiple Piston Ring Co., 227 W. 64th St., New York, N. Y.
- De Luxe Specialty Co., 178 Brookline Ave., Boston, Mass. (Mc., N. H., Vt., Mass., and R. I. Distributors for "T. N. T." Rings.) (See page 729.)
- Detroit Piston Ring Co., Richmond & Custer, Detroit, Mich. (See page 717.)
- Dixie Piston Ring Co., 310 S. 19th St., Omaha, Neb. (See page 718.)
- Double Seal Ring Co., 2335 Michigan Ave., Chicago, Ill. (See page 721.)
- Eclipse—See Hope Machine Co.
- Eco Co., Wormwood St., Boston, Mass. "Numethod." (See page 729.)
- Ellis Co., 1406 N. Michigan St., Elkhart, Ind.
- Efemco—See Foster, Merriam & Co.
- End-Oxy Appliance Co., Trenton, N. J. "Leek-tite."
- Endurance Piston Ring Co., Belleville, Ill.
- Ever-Tyte Piston Ring Division (Walter A. Zelnicker Supply Co.), 1600 Kingsland Ave. (Wellston Dist.), St. Louis, Mo.
- F. W. S.—See Stewart Mfg. Co.
- Fargo Motor Co., 1162-64 W. 22d St., Chicago, Ill. (See page 629.)
- Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo. (See page 725.)
- Foster, Merriam & Co., Meriden, Conn. "Efemco," "Bear-Tite." (See page 711.)
- Frank Motor Products Corp., Richmond Hill, N. Y. (See page 721.)
- Franklin Auto Parts Co., Franklin, N. H. (Sole Distributor for Franklin Machine Co., Franklin, N. H. (See page 718.)
- Franklin Machine Co.—See Franklin Auto Parts Co.
- Frostholm Bros., 221 Washington Sq., Syracuse, N. Y.
- Gas-Tite—See Chance Co.
- General Utility Co., Stock Exchange Bldg., Philadelphia, Pa. "Lightning."
- Gill Mfg. Co., 8300 S. Chicago Ave., Chicago, Ill. (See pages 709 and 710.)
- Gorman, O. D., 131 Ivy St., Atlanta, Ga.
- Goshen Specialty Mfg. Co., 211-13 S. Main St., Goshen, Ind. "Z. E."
- Gra-Seal—See Universal Piston Ring Co.
- Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. (See page 265.)
- Green Engineering Co., Main St. & Burns Ave., Dayton, O.
- Grundy Mfg. Corp., 697 Beaufait Ave., Detroit, Mich. "Permascal." (See page 715.)
- H & S—See Hanglitter & Storrs.
- Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.
- Hanglitter & Storrs, 983 S. Raymond Ave., Pasadena, Cal. "H & S."
- Harward Mfg. Co., 3939 Magnolia Ave., St. Louis, Mo.
- Hebert Mfg. Co., 575 Central St., Franklin, N. H.
- Hi-Comp—See Continental Piston Ring Co.
- Hi-Speed—See Continental Piston Ring Co.
- Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass. "Titan."
- Hope Machine Co., 2310-12 N. Second St., Philadelphia, Pa. "Eclipse."
- Houptert Machine Co., Harris Ave. & Marion St., Long Island City, N. Y. (See page 633.)
- Indiana Piston Ring Co., Hagerstown, Ind. "Teetor." (See page 721.)
- Ingram Motor Co., 1041-D Bay St., Rosebank, S. I., N. Y.
- J & R Shur Seal—See Super Auto Products Co.
- Jiffy-Grip—See McQuay-Norris Mfg. Co.
- K. H. K.—See Kay Co.
- K-P—See Keys Piston Ring Co.
- Kant-Leek—See Kauffman Engineering Co.
- Kauffman Engineering Co., 3561-53 Laclede Ave., St. Louis, Mo. "Acme," "Kant Leek."
- Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K H K."
- Kelly Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. (See page 715.)
- Keys Piston Ring Co., 3020 Olive St., St. Louis, Mo. "K-P." (See page 719.)
- Krasberg Piston Ring Works, 536 Lake Shore Drive, Chicago, Ill. "V-Plex."
- Lake Sales Co., 1947 Broadway, New York, N. Y. "T. N. T."
- Lammert & Mann Co., 215-221 N. Wood St., Chicago, Ill.
- Leak-Proof—See McQuay-Norris Mfg. Co.
- Leek-tite—See End-Oxy Appliance Co.
- Lightning—See General Utility Co.
- Longaker Co., V. A., 441-50 N. Capitol Ave., Indianapolis, Ind. "Wright."
- McCarthy Bros. & Wilson, 2241 N. Broad St., Philadelphia, Pa. (Penn., Del., Md., N. J., Va. and District of Columbia Distributors for Dedrick True-Fit Rings.) (See page 715.)
- McDowall, E. S., 2510 Park Blvd., Detroit, Mich. (See page 639.)
- McQuay-Norris Mfg. Co., Cooper & Southwest Sts., St. Louis, Mo. "Leak-Proof," "Superoyl," "Jiffy-Grip."
- Master Piston Ring Co., 1778 Broadway, New York, N. Y.
- Master—See Prescott Auto Parts Co.
- Merritt Co., S. Whyte, 516 Fifth Ave., New York, N. Y.
- Micro Piston Ring Co., 116 Nassau St., New York, N. Y.
- Miles Piston Ring Co., Chicago, Ill. (See page 719.)
- Mohawk Piston Ring Corp., Plymouth Bldg., Cleveland, O.
- Moore Co., D. Kirke, Cleveland O. (Sole Sales Agent for American Metals Parts Corp., Boston, Mass.) "Precision."
- Munger—See Splittorf Electrical Co.
- Neupert Mfg. Co., 82 Lark St., Buffalo, N. Y.
- Niagara Piston Ring Co., 1387 Niagara St., Buffalo, N. Y.
- Nilson-Miller Co., 50 13th St., Hoboken, N. J. "Prossen Flexo." (See page 719.)
- No-Leak-O Piston Ring Co., Baltimore, Md. (See page 717.)
- Noonan Mfg. Co., D. R., 219-21 W. Court St., Paris, Ill.
- Norman Piston Ring Corp., Peoria Heights, Ill.
- Numethod—See Eco Mfg. Co.
- Oiledge—See Seal-Tite Piston Ring Co.
- Orem Motor Protector Co., 2827 N. Calvert St., Baltimore, Md.
- Otter Mfg. Co., 243 W. 17th St., New York, N. Y. "Super."

Everything is listed under the NOUN or principal word



In its micrometric accuracy, in its roundness, in its flexibility, in its special mixture of grey iron individually cast—soft but not too soft—in its quick seating feature

The Kelly One-Piece Piston Ring

constitutes a standard by which perfection in piston rings may be gauged. Distributors desired in unassigned territory.

KELLY PISTON RING CO.

1900-4 Third St. N. E.,
Minneapolis, Minn.

We Represent in the Philadelphia Territory
the Manufacturers of

ZENITH CARBURETORS



PEDRICK 'TRUE-FIT' PISTON RINGS

Ignition,
Starting and
Lighting
Cables



Ford
Assemblies
and Spark
Plug Wires

MCCARTHY BROS. & WILSON, Inc
2241 N. Broad Street Philadelphia



One-piece. Individually cast out of special formula soft gray iron. Guaranteed oil and gas tight. Patented interlocking dovetail joint. Easy to fit as ordinary angle-cut rings. Quick seating turned surface—not ground. Oil wiping groove or plain finish.

SEND FOR FREE SAMPLE

Manufacturers and dealers are requested to send for free sample, PERMASEAL PISTON RING and quantity discount sheet.

ALSO PLAIN RINGS FOR FACTORY EQUIPMENT

We are prepared to furnish plain rings for factory requirements and will be pleased to submit quotations.

GRUNDY MANUFACTURING CORP.

697 Beaufait Avenue
DETROIT MICH.

BURD Quick-Seating PISTON RINGS One Piece



Easy
To
Install

List Prices (Subject to Trade Discount)

All diameters to 4 in. inclusive, ... 60c each
All diameters over 4 in. to 5 in. inclusive, 70c each

Burd High Compression Ring Co., Rockford, Illinois

RINGS, Piston (Continued)

- P. R. Piston Ring Co., Eau Claire, Wis.
 Panyard Piston Ring Sales Co., 3154 Cass Ave., Detroit, Mich.
 Pedrick True-Fit—See Wilkening Mfg. Co.
 Peerless Piston Ring Co., 3348-50 N. Clark St., Chicago, Ill.
 Pennsylvania Piston Ring Co., 203-05 St. Clair Ave., N. E., Cleveland, O. "Pepeco." (See page 719.)
 Pepeco—See Pennsylvania Piston Ring Co.
 Perfect Seal—See Redkin, Ekstrom & Co.
 Perfection Piston Ring Co., Ravenna, O. "Ultra Seal." (See page 711.)
 Pernaseal—See Grundy Mfg. Co.
 Piston Ring Co., Muskegon, Mich. "Quality." (See page 723.)
 Power King—See Automotive Piston Ring Co.
 Precision—See American Distributing Co.
 Prescott Auto Parts Co., Webster, Mass. "Master." (See page 711.)
 Pressure Proof Piston Ring Co., 107 Massachusetts Ave., Boston, Mass. (See page 717.)
 Prossen Flexo—See Nilson-Miller Co.
 Quality—See Piston Ring Co.
 R. P. R.—See Richmond Piston Ring Co.
 Rainbow Coll Protector Co., 278 Jefferson Ave., E. Detroit, Mich.
 Rebo—See Reus Mfg. Co.
 Redkin, Ekstrom & Co., 1439 Railroad Ave., Rockford, Ill. "Perfect Seal."
 Reus Mfg. Co., 150 W. Mt. Royal Ave., Baltimore, Md. "Rebo."
 Richmond Piston Ring Co., 616 S. Michigan Ave., Chicago, Ill. "R. P. R."
 Ringleader Mfg. Co., 1033 No. E St., Richmond, Ind.
 Rose, D. F., 117 W. 63rd St., New York, N. Y.
 S. & J. Motor Products Co., 61 W. Charlotte Ave., Detroit, Mich.
 Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Shur-Tite."
 St. Louis Piston Ring Corp., 1807-11 S. Second St., St. Louis, Mo. "Tell-Tale."
 Sav-Oil—See Carpenter & Jackson.
 Schaap Automobile Co., 344 Cumberland St., Brooklyn, N. Y. (See page 718.)
 Seal-Tite Piston Ring Co., 1900-04 Third St., N. E., Minneapolis, Minn. "Oiledge."
 Seymour Laboratoried Units, 3009 Lisbon Ave., Milwaukee, Wis.
 Shur-Tite—See Saginaw Metal Parts Corp.
 Shurfit—See Standard Piston Ring Co.
 Sioux—See Albertson & Co.
 Spacke Machine & Tool Co., Indianapolis, Ind.
 Splittdorf Electrical Co., 98 Warren St., Newark, N. J. "Munger."
 Spyroseal Mfg. Co., 1926 Gravois Ave., St. Louis, Mo.
 Standard Motor Products Co., 81 Tenth St., Long Island City, N. Y.
 Standard Piston Ring Co., 1304 Commonwealth Ave., Boston, Mass. "Shurfit."
 Star-K—See Stark-Inland Machine Works.
 Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."
 Steam Tractor Auto Mfg. Co., 219 W. Seventh St., Sioux City, Ia. "Carbon-O."
 Steel Spring Piston Ring Co., 147 Metropolitan Ave., Brooklyn, N. Y. "3-A."
 Stevens & Co., 375 Broadway, New York, N. Y. "Non Set." (See page 197.)
 Stewart Mfg. Corp., P. O. Box 345 W. Austin Ave., Chicago, Ill. "F. W. S."
 Super—See Otter Mfg. Co.
 Super Auto Products Co., 807 Ellis St., San Francisco, Cal. "J & R Shur-Seal."
 Super-Power Piston Ring Co., 2018 Market St., St. Louis, Mo.
 Superior—See White Machine Works.
 Superior Piston Ring Co., 226 Bates St., Detroit, Mich. (See page 749.)
 Superoyl—See McQuay-Norris Mfg. Co.
 T. N. T.—See Lake Sales Co.
 Tapco—See American Piston Co.
 Taylor Mfg. Co., 10 Portland St., Cambridge, Mass. "Taylor Tite."
 Taylor Tite—See Taylor Mfg. Co.
 Tee-Text—See Teetor Mfg. Co.
 Teetor—See Indiana Piston Ring Co.
 Teetor Mfg. Co., 701 Sand St., Indianapolis, Ind. "Tee-Text."
 Tell-Tale—See St. Louis Piston Ring Corp.
 Tes-Tite Piston Ring Sales Co., Atlantic Ave., Freeport, N. Y.
 3-A—See Steel Spring Piston Ring Co.
 Titan—See Higginson-Gibson Mfg. Co.
 Tiz-Tite—See Wayland Specialty Mfg. Co.
 Trindl Co., Wabash Ave. & 29th St., Chicago, Ill. (See page 637.)
 Ultra Seal—See Perfection Piston Ring Co.
 Unico Motor Products Corp., Commerce Bldg., Kansas City, Mo.
 U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 639.)
 United States Piston Ring Co., 1206 S. Grove St., Irvington, N. J. (See page 731.)
 Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.
 Universal Machine Co., Bowling Green, O.
 Universal Piston Ring Co., 1426 Rock St., Rockford, Ill. "Gra-Seal." (See page 723.)
 V-Plex—See Krasberg Piston Ring Works.
 Vapor Tight Ring Co., 1855 E. 23th St., Minneapolis, Minn.
 Verrylite—See Wilkie's Machine Works.
 Victory Hammered Piston Ring Co., 286 South St., Newark, N. J.
 Wadell Motor Corp., 661-71 Freylinghuysen Ave., Newark, N. J.
 Wainwright Engineering Corp., Connerville, Ind. (See page 632.)
 Wayland Specialty Mfg. Co., Wayland, N. Y. "Tiz-Tite."
 Wedgerite Piston Ring Co., Pine St., Plattsburg, N. Y.
 Welever Piston Ring Co., 1713 Canton St., Toledo, O.
 Whitcomb Machine Co., Monroe, Wis.
 White Machine Works, A. E., Eau Claire, Wis. "Superior."
 Wilcox Motor Parts & Mfg. Co., Saginaw, Mich. (See page 917.)
 Wilkening Mfg. Co., 15th & Mt. Vernon Sts., Philadelphia, Pa. "Pedrick True-Fit."
 Wilkie's Machine Works, 208 W. Third St., Winona, Minn. "Verrylite."
 Wright—See Longaker Co.
 Yale Piston Ring Co., Myrtle Ave., Boonton, N. J.
 Z. E.—See Goshen Specialty Mfg. Co.

RINGS, Piston, for Fords

- American Hammered Piston Ring Co., Baltimore, Md. (See pages 712 and 713.)
 Auto Engine Works, University Ave. & Griggs St., St. Paul, Minn.

Everything is listed under the NOUN or principal word

NO CARBON - MORE POWER - LESS FUEL



NO-LEAK-O

THE RING WITH A REASON

The cylinder walls of all gasoline motors warp and wear and the piston ring cannot conform to the warped places. The explosion and other forces destroy the seal of oil as it passes over these places; the gas escapes and oil passes up.

"NO-LEAK-O" "OIL SEALING" Piston Rings have a 45 degree angle grooves full of oil, which pulsates as the piston moves up and down and KEEPS a film of oil between the ring and the cylinder wall REGARDLESS of warped or worn places on the cylinder wall. The motor maintains maximum power.

RESTORES POWER IN OLD MOTORS WITHOUT REBORING. IN USE. POPULAR THROUGH SERVICE. PRICE 50c UP. If your jobber cannot supply you, order direct.

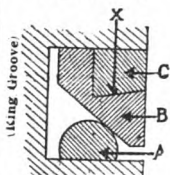
NO-LEAK-O PISTON RING CO., BALTIMORE, MD.

Factory: MUSKOGON, MICH.

PRESSURE PROOF PISTON RINGS

Service Station and Repairmen are finding in Pressure Proof Piston Rings one of the few dependable means of preventing Carbon and Smoke; Increasing Power and Saving Oil and Gas.

(Pressure Side)



The expander A acts on the bevel of ring B, pressing it outward against cylinder wall, and upward against pressure side of ring groove. The small ring C is slightly beveled at the point X, to lock it into the main ring. This locks the two rings together.

The principle on which these rings operate (illustrated at left) is mechanically correct—their ability to accomplish all that we claim for them is backed by years of performance unequalled by any other piston ring. "New Facts About Piston Rings" tells you why.

One Pressure Proof 3-Part or Two Pressure Proof 2-Part rings are a full piston equipment.



Pat. Mar. 2, 1915, Feb. 29, 1916

PRESSURE PROOF PISTON RING CO., 107 Mass. Ave., Boston, Mass.

DISTRIBUTORS

For California—C. F. Cooke, 1424 Bush St., San Francisco.

For Maine, New Hampshire—Keating & Shaw, Inc., 110 Exchange St., Portland, Maine.

For Lower Peninsula of Michigan—Chas. R. Manes, 3773 Jefferson Ave. E., Detroit, Mich.

CANADA — Pressure Proof Rings, Ltd., 8 Sun Life Bldg., Sherbrooke, Quebec.

For South Carolina—Gibbs Machinery Co., Wheat and Assembly Sts., Columbia, S. C.

For New York City and Long Island—Frank E. Small, 110 West 34th St., near 6th Ave., New York City.



DETROIT PISTON RING CO.

RICHMOND AND CUSTER

DETROIT, MICHIGAN



Please mention The Automobile Trade Directory

SCHAAP PISTON RINGS

Accepted by 95% of the Racing Drivers
Insure You

SILENT SMOKELESS POWER

Ralph Mulford drove 3000
miles of racing on one set of
Schaap Rings. Average of 107
Miles per Hour.

Manufactured by
SCHAAP AUTOMOBILE CO.
344 Cumberland Street
Brooklyn, N. Y.

Prices
\$1.00 up to 4"
1.25 up to 4 1/2"
1.50 up to 5"

A Quick Seating, One-Piece Concentric Piston Ring



Dixie Dependable Piston Rings are separately cast from the highest quality soft grey iron, have a turned face which insures quick seating and immediate relief from oil trouble.

For quality of material and workmanship as well as accuracy no ring surpasses the Dixie.

Retail price, 4" and under.....\$0.50
Over 4" and including 5"......60

DIXIE PISTON RING CO.
310 So. 19th St., Omaha, Nebr.

CHICAGO DISTRIBUTOR
Dixie Piston Ring Company
550 Washington Boulevard, Chicago, Illinois

"POWER KING" PISTON RINGS

Guaranteed LEAK PROOF

We want reliable agencies in localities where we are not as yet represented. To responsible established repair men we have an unusually attractive offer, if taken quickly.

**Automotive
Piston Ring Co.**
4510 Manchester Ave.
St. Louis, U. S. A.

"Franklin"



**Oil Sealing
Leak Proof
Fast Seating**

Diameters to
4-in. standard
widths.

50¢

Attractive Dealers Proposition

PLAIN LAP JOINT RINGS in Any Quantity
FRANKLIN AUTO PARTS CO.
FRANKLIN, N. H.

Please mention The Automobile Trade Directory

CYLINDER GRINDING

Oversize Pistons
"Flexo Hammered" Piston Rings
Wrist Pins



Manufacturers of

"FLEXO HAMMERED"
PISTON RINGS

A concentric hammered ring that is
worth your investigation

NILSON-MILLER CO.

50 Thirteenth St. Hoboken, N. J.



Each ring is cast individually,
of the highest quality gray
iron, machined accurately,
gauged and inspected care-
fully.

We carry a complete stock
of all standard sizes and
oversizes. Special sizes made
up on short notice.

PENNSYLVANIA PISTON RING CO.

203-205 St. Clair Ave. N. E.
Cleveland, Ohio

Announcement

In addition to our

3 PIECE PISTON RINGS

we can now also supply you with

Step-Joint Rings

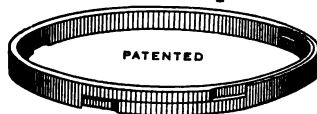
OF SUPERIOR QUALITY

These rings are uniformly soft
throughout—have the proper ten-
sion—and can be depended on to
give enduring service.

Keys Piston Ring Co.

3020 Olive Street, St. Louis, U. S. A.

MILES One-Piece Triple Seal



Piston Ring

*The Perfect Piston Packing—
One-Piece, Concentric
Uniform Wall Pressure*

The ONE, one-piece piston ring with
an expanding feature other than
depending on the tensile strength of
the iron; made **CONCENTRICALLY**
to fill groove, preventing oil accumu-
lation and deposit of carbon.
UNIFORM and PERMANENT
PRESSURE against cylinder wall.
Accurately machined to fit cylinder
for which intended, and needs no
hand filing or fitting to install. Com-
plete stock carried in 26 principle
cities. Write for nearest distributors'
address.

MILES PISTON RING CO.
CHICAGO, ILL.

Please mention The Automobile Trade Directory

RINGS, Piston, for Fords (Continued)

- Automotive Piston Ring Co.**, 4510 Manchester Ave., St. Louis, Mo. "Power King." (See page 718.)
- Bear-Tite**—See Foster, Merriam & Co.
- Bemiller Foundry & Machine Co.**—See Eckhouse & Co.
- Bu-Nite**—See Butler Mfg. Co.
- Burd High Compression Ring Co.**, Rockford, Ill. (See pages 715 and 727.)
- Butler Mfg. Co.**, 3234 W. Washington St., Indianapolis, Ind. "Bu-Nite."
- Carpenter & Jackson**, 1227 S. Olive St., Los Angeles, Cal. "Sav-oil."
- Chance Co.**, Centralia, Mo. "Gas-Tite."
- Chopa Piston Ring Co.**, 404-06 E. Jefferson Ave., Detroit, Mich.
- Cloud Accessories Corp.**, 1408 S. Wabash Ave., Chicago, Ill.
- Club Auto Parts & Machine Co.**, 204-06 Chester St., Buffalo, N. Y.
- Creech Piston Ring Co.**, 109 Union St., Jackson, Mich.
- De Luxe Specialty Co.**, 176 Brookline Ave., Boston, Mass. (Mc., N. H., Vt., Mass. and R. I. Distributors for "T. N. T." Rings.) (See page 729.)
- Detroit Piston Ring Co.**, Richmond & Custer Sts., Detroit, Mich. (See page 717.)
- Dixie Piston Ring Co.**, 310 S. 19th St., Omaha, Neb. (See page 718.)
- Du Bois Machine Shop**, 118-28 Hudson Ave., Albany, N. Y.
- Duplex**—See Piston Ring Co.
- Eckhouse & Co.**, Walter, 616-23 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Belleville, O.) (See page opposite Title Page.)
- Eclipse**—See Hope Machine Co.
- Eco Co.**, Wormwood St., Boston, Mass. "Numethod." (See page 729.)
- Efemco**—See Foster, Merriam & Co.
- Ellis Co.**, 1406 N. Michigan St., Elkhart, Ind.
- Ever-Tyte Piston Ring Division** (Walter A. Zelnicker Supply Co.), 1600 Kingsland Ave. (Wellston Dist.), St. Louis, Mo.
- Fore Electrical Mfg. Co.**, 5255 N. Market St., St. Louis, Mo. (See page 725.)
- Foster, Merriam & Co.**, Meriden, Conn. "Efemco," "Bear-Tite." (See page 711.)
- Frank Motor Products Corp.**, Richmond, Hill, N. Y. (See page 721.)
- Franklin Auto Parts Co.**, Franklin, N. H. (Sole Distributors for Franklin Machine Co., Franklin, N. H. (See page 718.)
- Franklin Machine Co.**—See Franklin Auto Parts Co.
- Frostholm Bros.**, 221 Washington Sq., Syracuse, N. Y.
- Fulton-Houston Co.**, 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 415.)
- Gas-Tite**—See Chance Co.
- Gas-Tite**—See Star Specialty Mfg. Co.
- General Utility Co.**, Stock Exchange Bldg., Philadelphia, Pa. "Lightning."
- Grundy Mfg. Corp.**, 697 Beaufant Ave., Detroit, Mich. "Permascal." (See page 715.)
- Hall Scott Motor Car Co.**, Berkeley, Cal. "Johnson."
- Hanglitter & Storrs**, 983 S. Raymond Ave., Pasadena, Cal.
- Hastings Mfg. Co.**, 36 E. Mill St., Hastings, Mich. "100%." (See page 521.)
- Hope Machine Co.**, 2310-12 N. Second St., Philadelphia, Pa. "Eclipse."
- Ingram Motor Co.**, 1041 D Bay St., Rosebank, S. I., N. Y.
- J & R Shur-Seal**—See Super Auto Products Co.
- Jiffy-Grip**—See McQuay-Norris Mfg. Co.
- Johnson**—See Hall Scott Motor Car Co.
- K-P**—See Keys Piston Ring Co.
- K. H. K.**—See Kay Co., K. H.
- Kay Co., K. H.**, 967 Woodward Ave., Detroit, Mich. "K. H. K."
- Kelly Piston Ring Co.**, 1900-04 Third St., N. E., Minneapolis, Minn. (See page 715.)
- Keys Piston Ring Co.**, 3020 Olive St., St. Louis, Mo. "K-P." (See page 719.)
- Krasberg Piston Ring Works**, 536 Lake Shore Drive, Chicago, Ill. "V-Plax."
- Lake Sales Co.**, 1947 Broadway, New York, N. Y. "T. N. T."
- Leak-Proof**—See McQuay-Norris Mfg. Co.
- Lightning**—See General Utility Co.
- McDowall, E. S.**, 2510 Park Blvd., Detroit, Mich. (See page 639.)
- McQuay-Norris Mfg. Co.**, Cooper & Southwest Sts., St. Louis, Mo. "Leak-proof," "Superoyl," "Jiffy-Grip."
- Master Piston Ring Co.**, 1778 Broadway, New York, N. Y.
- Micro Piston Ring Co.**, 116 Nassau St., New York, N. Y.
- Miles Piston Ring Co.**, Chicago, Ill. (See page 719.)
- Mohawk Piston Ring Co.**, Plymouth Bldg., Cleveland, O.
- Munger**—See Splittorf Electrical Co.
- Niagara Piston Ring Co.**, 1387 Niagara St., Buffalo, N. Y.
- No-Leak-O Piston Ring Co.**, Baltimore, Md. (See page 717.)
- Noonan Mfg. Co.**, D. R., 219-21 W. Court St., Paris, Ill.
- Norman Piston Ring Corp.**, Peoria Heights, Ill.
- Numethod**—See Eco Mfg. Co.
- Olledge**—See Seal-Tite Piston Ring Co.
- 100%**—See Hastings Mfg. Co.
- Orem Motor Protector Co.**, 2527 N. Calvert St., Baltimore, Md.
- P. R. Piston Ring Co.**, 642 E. Madison St., Eau Claire, Wis.
- Pennsylvania Piston Ring Co.**, 203-05 St. Clair Ave., N. E., Cleveland, O. "Pepeco." (See page 719.)
- Pepeco**—See Pennsylvania Piston Ring Co.
- Perfect Seal**—See Redkin, Ekstrom & Co.
- Permascal**—See Grundy Mfg. Corp.
- Piston Ring Co.**, Muskegon, Mich. "Quality." (See page 723.)
- Pressure Proof Piston Ring Co.**, 107 Massachusetts Ave., Boston, Mass. (See page 717.)
- Quality**—See Piston Ring Co.
- Rebco**—See Reus Mfg. Co.
- Redkin, Ekstrom & Co.**, 1439 Railroad Ave., Rockford, Ill. "Perfect Seal."
- Reus Mfg. Co.**, 150 W. Mt. Royal Ave., Baltimore, Md. "Rebco."
- Ringleader Mfg. Co.**, 1033 No. E St., Richmond, Ind.
- Rose, D. F.**, 117 W. 63rd St., New York, N. Y.
- Saginaw Metal Parts Corp.**, Williamson & River Sts., Saginaw, Mich. "Shur-Tite."
- St. Louis Piston Ring Corp.**, 1807-11 S. Second St., St. Louis, Mo. "Tell-Tale."
- Sav-oil**—See Carpenter & Jackson.
- Schaap Automobile Co.**, 344 Cumberland St., Brooklyn, N. Y. (See page 718.)
- Seal-Tite Piston Ring Co.**, 1900-04 Third St., N. E., Minneapolis, Minn. "Olledge."
- Seymour Laboratories Units**, 3009 Lisbon Ave., Milwaukee, Wis.

Everything is listed under the NOUN or principal word

**WHEN
HAS
A
PISTON
RING**

Motor car manufacturers should write for data showing how to accurately determine the wall pressure of piston rings.

**EQUAL
WALL
PRESSURE?**

Frank-Process Rings are guaranteed not to vary in periphery dimensions more than .005.

Equal pressure is only obtainable with rings of true peripheries.

FRANK MOTOR PRODUCTS CORP.
RICHMOND HILL NEW YORK CITY

**TEETOR
PERFECT
CIRCLE
PISTON RINGS**

Perfect Circle rings are ROUND. They are individually cast from finest gray iron, turned on the surface, and machined to a *perfect circle*. Backed by 14 years' experience.

*"Oil Down—
Compression Up"*

INDIANA PISTON RING CO.
HAGERSTOWN, INDIANA



**DOUBLE SEAL
RINGS**

**For Power and
Economy**

**A complete stock of all sizes
is carried at all branches**

SALES BRANCHES

ATLANTA, GA.	66 1/2 N. Forsyth St.
BALTIMORE, MD.	1710 N. Charles St.
BOSTON, MASS.	107 Massachusetts Ave.
BUFFALO, N. Y.	1377 Main St.
CHICAGO, ILL.	2335 Michigan Ave.
CLEVELAND, O.	1841 Euclid Ave.
DALLAS, TEX.	208 Browder St.
DENVER, COLO.	430 Eighteenth St.
DETROIT, MICH.	4602 Grand River Ave.
EL PASO, TEX.	412 Myrtle Ave.
FRESNO, CAL.	1922 Tuolumne St.
FORT WORTH, TEX.	316-328 Lake St.
HOUSTON, TEX.	1212 Main St.
KANSAS CITY, MO.	214 E. 17th St.
LITTLE ROCK, ARK.	414 Louisiana St.
LOS ANGELES, CAL.	603 W. Pico St.
MEMPHIS, TENN.	457 Monroe Ave.
MILWAUKEE, WIS.	160 Mason St.
MINNEAPOLIS, MINN.	825 Hennepin Ave.
NEW ORLEANS, LA.	808 St. Charles St.
NEW YORK, N. Y.	1834 Broadway
OKLAHOMA CITY, OKLA.	416 N. Robinson St.
OMAHA, NEB.	415 S. 24th St.
PHILADELPHIA, PA.	1327 N. Broad St.
PITTSBURGH, PA.	206 Werner Bldg. Hiland and Baum Sts.
PORTLAND, ORE.	90 N. Broadway
SACRAMENTO, CAL.	1008 J St.
SAN ANTONIO, TEX.	314 Kampmann Bldg.
SAN FRANCISCO, CAL.	1124 Polk St.
SEATTLE, WASH.	1213 Pine St.
STOCKTON, CAL.	106 N. California St.
WINDSOR, ONT., CAN.	19 E. Sandwich St.

Double Seal Ring Co.

General Sales Offices

**2335 Michigan Avenue
Chicago, Ill.**

RINGS, Piston, for Fords (Continued)

Shur-Tite—See Saginaw Metal Parts Corp.
 Shurfit—See Standard Piston Ring Co.
 Splitdorf Electrical Co., 98 Warren St., Newark, N. J. "Munger."
 Staff, J. Wadsworth, 122 S. Michigan Blvd., Chicago, Ill. (Sole Distributor for Trump Mfg. Co., Crown Point Ind.)
 Standard Motor Products Co., 81 Tenth St., Long Island City, N. Y.
 Standard Piston Ring Co., 1304 Commonwealth Ave., Boston, Mass. "Shurfit."
 Star-K—See Stark-Inland Machine Works.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "Gas-Tite." (See page 769.)
 Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."
 Steel Spring Piston Ring Co., 147 Metropolitan Ave., Brooklyn, N. Y. "3-A."
 Stevens & Co., 375 Broadway, New York, N. Y. (See page 197.)
 Super Auto Products Co., 807 Ellis St., San Francisco, Cal. "J & R Shur-Seal."
 Superior Piston Ring Co., 226 Bates St., Detroit, Mich. (See page 749.)
 Super-Power Piston Ring Co., 2018 Market St., St. Louis, Mo.
 Superoyl—See McQuay-Norris Mfg. Co.
 T. N. T.—See Lake Sales Co.
 Tell-Tale—See St. Louis Piston Ring Corp.
 3-A—See Steel Spring Piston Ring Co.
 Trump Mfg. Co.—See Staff, J. Wadsworth.
 Unico Motor Products Corp., Commerce Bldg., Kansas City, Mo.
 Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.
 V-Plex—See Krasberg Piston Ring Works.
 Vapor Tight Ring Co., 1856 E. 28th St., Minneapolis, Minn.
 Wilcox Motor Parts & Mfg. Co., Saginaw, Mich. (See page 917.)
 Yale Piston Ring Co., Myrtle Ave., Boonton, N. J.

RINGS, Piston Ring Expanding

(Spring ring designed to be placed under old piston ring to give increased pressure)

American Auto Products Co., 1319 L St. N. W., Washington, D. C. "Nu-Life."
 Apex—See Thomson-Friedlob Mfg. Co.
 Nu-Life—See American Auto Products Co.
 Thomson-Friedlob Mfg. Co., Dept. T, Peoria, Ill. "Apex." (See page 813.)

RINGS, TIRE RETAINING—See Fillers, Tire Bead**RINGS, Tractor Quick Detachable Steering**

Loxon—See Universal Lug Co.
 Universal Lug Co., 1401 S. 55th Ct., Cicero, Ill. "Loxon."

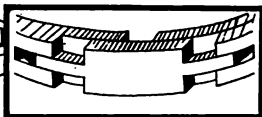
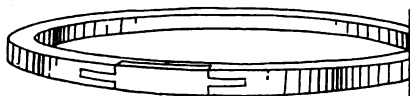
RIVET CLIPPERS—See Clippers, Bolt and Rivet**RIVET SETS—See Sets, Rivet****RIVETING JIGS—See Jigs****RIVETING MACHINES—See Machines, Brake Band Riveting****RIVETS, Brass and Copper**

American Brass Co., Waterbury, Conn. (See page 161.)
 Atlas Tack Corp., Fairhaven, Mass.
 Blake & Johnson Co., Waterbury, Conn. (See page 737.)
 Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.
 Bridgeport Brass Co., Bridgeport, Conn. "Crown."
 Champion Brass Works, Coldwater, Mich. (See page 214.)
 Clendenin Bros., Central Ave. & Fawn St., Baltimore, Md.
 Cleveland Wrought Products Co., W. 58th St., South of Denison, Cleveland, O.
 Cobb & Drew, Plymouth, Mass.
 Continental Wood Screw Co., Mt. Pleasant St., New Bedford, Mass.
 Crown—See Bridgeport Brass Co.
 Eagle—See Plume & Atwood Mfg. Co.
 Falls Rivet Co., Kent, O.
 Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."
 General Mfg. Co., 66 N. Elm St., Waterbury, Conn.
 Hassall, John, Clay & Oakland Sts., Brooklyn, N. Y. (See page 723.)
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Plume & Atwood Mfg. Co., 470 Bank St., Waterbury, Conn. "Eagle."
 Progressive Mfg. Co., 52 Norwood St., Torrington, Conn.
 Raybestos Co., Bridgeport, Conn. (See page 529.)
 Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.
 Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.
 Stimpson Co., Edward B., 70 Franklin Ave., Brooklyn, N. Y.
 Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
 Waterbury Mfg. Co., 286 Grand St., Waterbury, Conn.

RIVETS, CLINCH—See Rivets, Tubular**RIVETS, CONTACT—See Platinum; also Points, Sparking****RIVETS, COPPER—See Rivets, Brass****RIVETS, Iron and Steel**

Aetna Screw & Bolt Co., 213 N. Desplaines St., Chicago, Ill.
 American Screw Co., 21 Stevens St., Providence, R. I.
 Atlas Bolt & Screw Co., Cleveland, O. (See page 745.)
 Cobb & Drew, Plymouth, Mass.
 Columbus Bolt Works Co., Columbus, O. (See page 147.)
 Continental Wood Screw Co., Mt. Pleasant St., New Bedford, Mass.
 Falls Rivet Co., Kent, O.
 Garland Mfg. Co. (W. Pittsburgh), Pittsburgh, Pa.
 General Mfg. Co., 66 N. Elm St., Waterbury, Conn.
 Hassall, John, Clay & Oakland Sts., Brooklyn, N. Y. (See page 723.)
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 821.)
 Lamson & Seaborn Co., 2188 Scranton Rd., Cleveland, O.

Everything is listed under the NOUN or principal word



GRA-SEAL PISTON RINGS

Perfected and patented with the Strongest Patent since 1886 by W. G. Burdick.

Installed in U. S. Government and other cars, and in every instance increased the mileage on gasoline from 15% to 40%, reduced oil consumption from 25% to 50%, eliminated carbon and dirty spark plugs, and after four years' actual service are still doing the work.

Write for our terms to the trade

UNIVERSAL PISTON RING COMPANY

1426 Rock Street, Rockford, Illinois

The A. J. Alsdorf Corporation, Exclusive Foreign Distributors, Chicago, U. S. A.

More Than a Million a Month

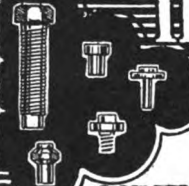


**QUALITY
SNAP RINGS**

PREDOMINATE

THE *Piston* RING COMPANY
MUSKEGON, MICH.

IRIDIO



IRIDIO- PLATINUM TIPPED SCREWS & RIVETS

What You Need, When You Need It

We carry all standard sizes of the best and most serviceable iridio-platinum heads securely welded on screws and rivets. We make—on short notice—any special style according to specification or degree of hardness.

"Quick quality-service."

R. & H. Platinum Works
709 6th Avenue, New York City
Factory: Perth Amboy, N. J.



RIVETS, AND ESCUTCHEON PINS

IRON, BRASS, COPPER, GERMAN SILVER, ALUMINUM

HAVE BEEN MAKING THEM RIGHT SINCE 1850

JOHN HASSALL INC. CLAY & OAKLAND STS., BROOKLYN, N. Y.

Please mention The Automobile Trade Directory

RIVETS, Iron and Steel (Continued)

Michigan Bolt & Nut Works, Ft. Meldrum Ave., Detroit, Mich.

National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.

Pittsburg Screw & Bolt Co., Preble Ave. (N. E.), Pittsburgh, Pa.

Plymouth Mills, Billington St., Plymouth, Mass.

Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.

Upson Nut Co., Unionville, Conn.

RIVETS, PLATINUM—See Platinum; also Points, Sparking

RIVETS, STEEL—See Rivets, Iron

RIVETS, Tubular and Clinch

Thompson Mfg. Co., Judson L., Waltham, Mass.

Tubular Rivet & Stud Co., Boston, Mass. (See page 725.)

ROAD GUIDES—See Maps, Road

ROAD MAPS—See Maps, Road

ROAD SIGNS—See Signs, Special Road

ROBE LOCKS—See Locks, Robe

ROBE RAIL BAGS—See Bags, Coat Rail

ROBE RAILS—See Rails, Robe

ROBES, Automobile Lap

Apronall—See Burlington Blanket Co.

Automobile Apparel Co., Bush Ave., Port Chester, N. Y. "Frumt-Seat."

Ayres & Sons, Wm., Cumberland & Fourth Sts., Philadelphia, Pa.

B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)

Ballard & Co., J. O., Pine St., Malone, N. Y.

Beckman Co., 1817 Fulton Rd., Cleveland, O.

Bemco—See B. E. Mfg. Co.

Bishop Co., J. E., Wyandotte, Mich.

Blumenthal & Co., Sidney, 395-401 Fourth Ave., New York, N. Y.

Burlington Blanket Co., 711 Oregon St., Burlington, Wis. "Apronall."

Chase & Co., L. C., Boston, Mass.

Chippewa Falls Woolen Mill, Chippewa Falls, Wis.

Cleveland Woolen Mill Co., Cleveland, O.

Colonial Woolen Mills Co., Cleveland, O.

Comfort Auto Robe Co., Waterloo, N. Y.

Co-Zee—See Omaha Auto Top Co.

Crosby-Frisian Fur Co., 571 Lyoll Ave., Rochester, N. Y.

Curtis & Von Bernuth Mfg. Co., 88 W. Broadway, New York, N. Y.

Davis, Geo. W., 32 Southgate St., Worcester, Mass.

Dawson, J. & E., Palethorp & Somerset Sts., Philadelphia, Pa. "Name-On."

Draper Bros. Co., Canton, Mass.

Dusenbury & Co., Louis, 229 Fourth Ave., New York, N. Y. (See page 800.)

Dyett Co., Frank J., Illon, N. Y.

Frumt-Seat—See Automobile Apparel Co.

Gausler & Starr Co., Delaware & Walnut Sts., Philadelphia, Pa.

Gordon Co., J. P., 555 N. Fourth St., Columbus, O.

Milwaukee Tanning & Clothing Co., Hanover & Florida Sts., Milwaukee, Wis.

Motorwear—See Wallace Co.

Name-On—See Dawson, J. & E.
New Process Co., Warren, Pa.
New York Lap Robe Co., 219 Greene St., New York, N. Y.

Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)

Patrick-Duluth Woolen Mills, Duluth, Minn.

Perfection Robe Co., 16 S. Market St., Chicago, Ill.

Premier Auto Novelty Mfg. Co., 375 W. Broadway, New York, N. Y.

Reillon Frères, 19 W. 34th St., New York, N. Y.

Riley & Co., Wm. B., 233 Chestnut St., Philadelphia, Pa.

Shayne & Co., C. C., 126 W. 42d St., New York, N. Y.

Shelton Looms, Shelton, Conn.

Stroock & Co., S., 11-13 E. 26th St., New York, N. Y.

Unity Lap Robe Mfg. Co., 49 E. 21st St., New York, N. Y.

Wallace Co., Hugh, 2616-40 E. Grand Blvd., Detroit, Mich. "Motorwear."

ROBES, Special Lap, for Fords

Automobile Apparel Co., Bush Ave., Port Chester, N. Y. "Frumt-Seat"

Frumt-Seat—See Automobile Apparel Co.

Hopewell Bros., Watertown, Mass. (See page 905.)

Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)

ROCKER ARM SHAFTS—See Screw Machine Products to Order

ROD ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Radius Rods

ROD CUTTERS—See Cutters, Rod and Bar

ROD GAGES FOR FORDS—See Gages, Connecting Rod

RODS, Adjustable Valve Lift

(See also Machine Work; also Screw Machine Products)

Bard Mfg. Co., Royersford, Pa. (See page 149.)

Bridgeport—See Lyford Bros.

Cleveland Piston Pin & Bolt Co., Stuyvesant Bldg., Cleveland, O.

Coful Auto Parts Co., National City Bank Bldg., Cleveland, O. (Manufacturers Agents.) (See page 509.)

Detroit Screw Works, 1494 Franklin St., Detroit, Mich.

Goodnow & Blake Mfg. Co., Fourth & Porter Sts., Detroit, Mich. "Zephyr."

Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind.

Lyford Bros., 625 Washington Ave., Bridgeport, Conn. "Bridgeport."

Michigan Screw Co., 506 E. Hosmer St., Lansing, Mich.

National Steel Products Co., 2270 Franklin St., Detroit, Mich.

Phoenix Mfg. Co., Grand River at Loraine, Detroit, Mich. (See page 725.)

Recording Devices Co., 584 W. Fifth St., Dayton, O.

R. S. P.—See Rich Steel Products Co.

Rich Steel Products Co., Springfield Pl., Battle Creek, Mich. "R. S. P."

Steel Products Co., Cleveland, O. (See page 915.)

Wilcox Motor Parts & Mfg. Co., Saginaw, Mich. (See page 917.)

Zephyr—See Goodnow & Blake Mfg. Co.

Everything is listed under the NOUN or principal word



LIST PRICES

Sizes $2\frac{1}{8}$ " to $3\frac{3}{4}$ " inclusive, ea. \$1.00
 Sizes 4" to 5" inclusive, ea. 1.25

Write Regarding Your Special Requirements and Discounts.

FORE ELECTRICAL MFG. CO., Inc.

ST. LOUIS

5255 NORTH MARKET STREET

MISSOURI

The underlapping ends produce a perfect compression and gas-tight ring—wear will not open its joints. The oil is kept where it belongs.

The construction of this ring is such that it has a perfect sealed joint when compressed on the piston head and if inserted in a new block or reground cylinder WILL NOT wear them egg shape—because of even wall pressure at all points.

Its frictional resistance is so balanced that it allows the ring to expand and contract to the bore of the cylinder walls with the least possible resistance.

PHOENIX PRODUCTS

TAPPETS

MUSHROOM PUSH RODS

SPRING SHACKLE BOLTS

PISTON PINS

We positively guarantee quality and service.

PHOENIX MANUFACTURING CO.

Grand River at Loraine
 DETROIT, MICH.

The Fairchild Combined Needle Valve Adjuster and Choking Device for Cowl Type Ford Cars.



Convenience and Simplicity: No more reaching under instrument board to adjust carburetor. With this device the needle valve is at your finger tips. To choke carburetor pull knob out in usual manner. This device can be installed by a novice in two or three minutes, uses existing holes previously occupied by choker. First cost is the only cost.

Quick Starting: Adjusting knob with dial set at economical running position means a quarter or halfturn to the left and you have a rich mixture for starting; when motor warms up turn back to economical position.

Economy: More miles per gallon as you are using all gas consumed.

Power: By burning up all gas consumed you are eliminating carbon, which means power, not preignition.

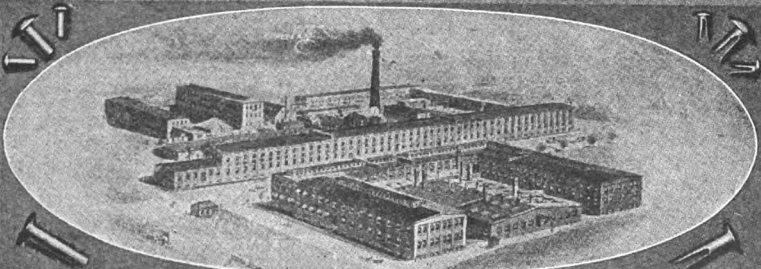
Smooth Running: A too rich or too lean a mixture will make your motor sputter. With this device you are able to get exactly the right mixture for idling, hard pulling and smooth running.

Price and Guarantee: Retail price, \$1.25. If the owner of one of these devices at the end of 30 days is not entirely satisfied he is requested to return it to his dealer who will gladly refund his money.

Specification: Operating knob, gray fibre with natural finish aluminum disc, rest of device nickel plated. Packed in separate cartons. No. 1 outfits (for all cowl type Fords except Sedans). No. 2 outfits (for Sedans only).

The Fairchild Manufacturing Company
 Kalamazoo, Michigan

TUBULAR AND CLINCH RIVETS



TUBULAR RIVET AND STUD CO., BOSTON MASSACHUSETTS, U.S.A.

Please mention The Automobile Trade Directory

RODS, Adjustable Valve Lift, for Fords

(For Valve Stem Adjusters—See Adjusters, Valve Stem.)

Acme Mfg. Co., Boonton, N. J.
B-N—See Burgess-Norton Mfg. Co.
Burgess-Norton Mfg. Co., Dept. D. 532-44
Peyton St., Geneva, Ill. "B-N."
(See page 627.)
Detroit Screw Works, 1488 Franklin St., Detroit, Mich.
Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.
Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

RODS, ALIGNING JIG CONNECTING FOR FORDS—See Jigs, Connecting Rod Aligning.

RODS, ALUMINUM—See Aluminum, Sheet

RODS, Brake

(Brake Rods complete with yoke or eye rod ends to blue print or specification)

Ford Mfg. Co., M. J., 307-11 Newark St., Hoboken, N. J. "Gemmer."
Gemmer—See Ford Mfg. Co.
Imperial Welding Co., 2704 W. Jefferson Ave., Detroit, Mich.
Jacobs Co., F. L., 343 Bellevue Ave., Detroit, Mich. (See page 727.)
Metzger Welding Co., 1652 Powers St., Cincinnati, O.
Schweppe & Wilt Mfg. Co., Mt. Elliot & Conant Ave., Detroit, Mich.
Standard Parts Co., Cleveland, O.
(See pages 85, 119, 701 and 798.)
Steel Products Co., (Michigan Plant) 7731 Conant Ave., Detroit, Mich.
Steel Products Co., Cleveland, O.
(See page 915.)

RODS, BRASS—See Brass, Sheet

RODS, Connecting

(Finished or Machined Rods: for connecting rods in the rough—See Forgings, Drop)

Aluminite—See Green Engineering Co.
Bonney Forge & Tool Works, Allentown, Pa.
Carde Stamping & Tool Co., West Side, Saginaw, Mich.
Gill & Sons Forge & Machine Works, P. H., Lorraine & Otsego Sts., Brooklyn, N. Y.
Green Engineering Co., Main St. & Burns Ave., Dayton, O. "Aluminite."
Layman Pressed Rod Co., 25 Broad St., New York, N. Y. "Pres-Tube."
Leard Co., William, New Brighton, Pa.
(See page 207.)
Perfection Auto Parts Co., 410 Lakeside Ave., N. W., Cleveland, O.
Pres-Tube—See Layman Pressed Rod Co.
Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich. "Super-Lite."
Sampson Mfg. Co., 1607-11 Prairie Ave., Chicago, Ill.
Standard Gauge Steel Co., Beaver Falls, Pa. (See page 247.)
Super-Lite—See Saginaw Metal Parts Corp.
Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 729.)

RODS, Connecting, for Fords

Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
Au-To Compressor Co., 308 S. Mulberry St., Wilmington, O. "Oro."
Canton Co., A. S., 174 Franklin St., New York, N. Y.
Craig-Hunt—See Speedway Engineering Co.
Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.)
(See page 415.)
Gray Andrews Corp., 53 Vanderbilt Ave., New York, N. Y. (Sole Distributors for E. E. Redges Co., Auburn, N. Y.)
Green Bay Drive Calk Co., State & Ninth Sts., Green Bay, Wis.
Grossman Auto Parts Co., White Plains, N. Y.
Harley Co., 1921 Page Blvd., Springfield, Mass. "Seco."
Healy Tool & Appliance Co., 297 Washington St., Buffalo, N. Y.
Hedges Co.—See Gray Andrews Corp.
Hussey Power Parts Co., Giddings Rd., Cleveland, O.
Kraemer & Co., Newark, N. J.
(See page 643.)
Niagara Motors Corp., Dunkirk, N. Y.
Oro—See Au-To Compressor Co.
Seco—See Harley Co.
Specialty Products Co., 236 South St., Newark, N. J.
Speedway Engineering Co., 910 N. Illinois St., Indianapolis, Ind. "Craig-Hunt."
(See page 381.)
U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.
Union Forging Co., Union, N. Y.
(See page 253.)
Wayne Engineering Co., 1400 Broadway, New York, N. Y.
Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 729.)

RODS, COPPER—See Brass, Sheet

RODS, FIBRE—See Fibre, Hard

RODS, Gasoline Cock Control, for Fords

Sunderman Corp., Newburgh, N. Y.
(See page 191.)

RODS, PUSH—See Rods, Adjustable Valve

RODS, Radius

B-N—See Burgess-Norton Mfg. Co.
Burgess-Norton Mfg. Co., Dept. D., 532-44
Peyton St., Geneva, Ill. "B-N."
(See page 627.)
Cincinnati Ball Crank Co., 90 North St., Cincinnati, O. (See page 498.)
Larimer Co., 52 S. River St., Aurora, Ill.

RODS, Radius, for Fords

(Auxiliary radius rods or braces for front axles)

All-In-One—See Tungsten Mfg. Co.
Allied Steel Products Co., 7 Walnut St., Aurora, Ill. "A-S-P."
Apco Mfg. Co., 703 Eddy St., Providence, R. I.

Everything is listed under the NOUN or principal word

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Complete Brake Rod
Assemblies
made to Blue Prints

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Radius Rods
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Radius Rods (old and new), Drive
Shafts, Roller Bearing Sleeves,
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RODS, Radius, for Fords (Continued)

- Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
- A-S-P—See Allied Steel Products Co.
- Asch and Co., Inc., 16-24 W. 61st, New York, N. Y. (Eastern and Southern Distributors for Spencer Rods.) (See page 247.)
- Auto Metal Parts Co., 624 E. Locust St., Des Moines, Ia. (See page 775.)
- Automat-Co.—See Automotive Material Co.
- Automotive Material Co., 451 E. Ohio St., Chicago, Ill. "Automat-Co."
- B. B.—See Bayne Mfg. Co.
- B-N—See Burgess-Norton Mfg. Co.
- Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
- Bayne Mfg. Co., Bushnell, Ill. "B. B." (See page 149.)
- Bear Mfg. Co., E. 17th St. & First Ave., Rock Island, Ill.
- Bieber Co., Ernst, 117 S. Third St., Reading, Pa. "J. C. M."
- Bridgers Co., J. D., Florence, S. C. (See page 727.)
- Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
- Bullinger Mfg. Co., 838-42 N. Wells St., Chicago, Ill.
- Burgess-Norton Mfg. Co., Dept. D., 532-44 Peyton St., Geneva, Ill. "B-N." (See page 627.)
- Burlington Motor Truck Co., Burlington, Wis.
- Carrier Motor Truck Co., 7641 Gratiot Ave., Detroit, Mich.
- Casco Mfg. Co., Jackson St., Thomasville, Ga. (Sole Distributors for Cooper Auto Supply Co., Thomasville, Ga.)
- Cleveland Heater Co., 1900 W. 112th St., Cleveland, O. "Rex."
- Cooper Auto Supply Co.—See Casco Mfg. Co.
- Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)
- Dependable—See Gahm-McCormick Co.
- Donlin Auto Co., C. A., Hopkins, Mo.
- Dow Co., Louisville, Ky. (See page 157.)
- Dunham Co., Thos., Aurora, Ill. (See page 145.)
- Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Stone Accessories Mfg. Co., Chicago, Ill.)
- Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 415.)
- Gahm-McCormick Co., 806 E. Main St., Streator, Ill. "Dependable." (See page 171.)
- Gray Andrews Corp., 52 Vanderbilt Ave., New York, N. Y. (Sole Distributors for Manufacturing Accessories Corp., Brooklyn, N. Y. "Maco.")
- Green Bay Drive Calk Co., State & Ninth Sts., Green Bay, Wis.
- Greenfield Motor Products Co., 6326 Linwood St., Detroit, Mich. (See page 727.)
- Halls, A. S., Ortonville, Minn.
- Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.
- Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Slip-in."
- Illinois Brass Mfg. Co., 334-30 W. Ontario St., Chicago, Ill.
- J. C. M.—See Bleber Co.
- Jones, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Distributors East of the Mississippi River for Standley Adjusters.) (See page 138B.)
- Ketler-Elliott Co., 3153 S. California Ave., Chicago, Ill.
- Larimer Co., 52 S. River St., Aurora, Ill.
- McKinnon Dash Co., Buffalo, N. Y. (See page 686.)
- Maco—See Gray-Andrews Corp.
- Manufacturing Accessories Corp.—See Gray-Andrews Corp.
- Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
- Midway Mechanical Co., St. Paul, Minn.
- Monnich-Gaylord Co., Hooper, Neb.
- Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
- Niagara Motors Corp., Dunkirk, N. Y.
- Ostlund Bros., Ortonville, Minn.
- Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
- Rex—See Cleveland Heater Co.
- Shunk Mfg. Co., Bucyrus, O.
- Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
- Slip-in—See Hudson Motor Specialties Co.
- Spencer Metal Products Co., Spencer, O.
- Standard Auto Accessory Co., 100 Mill St., Leipsic, O.
- Standley Skid Chain Co., Boone, Ia. (See page 138B.)
- Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 759.)
- Sterling—See Republic Auto Parts Co.
- Stone Accessories Mfg. Co.—See Eckhouse & Co.
- Strunk Garage Co., Walter R., 318 Moss St., Reading, Pa.
- Tube Products Co., 2699 Guoin St., Detroit, Mich.
- Tungsten Mfg. Co., Marshalltown, Iowa. "All-in-One." (See page 647.)
- U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.
- Vaughn-Harris Co., Vermillion, S. Dak.
- W-A—See Whetstone & Co.
- Walker Mfg. Co., Racine, Wis. (See page 485.)
- Whetstone & Co., John H., Court St., Lapeer, Mich. "W. A."

RODS, Rear Axle Truss, for Fords

(For reinforcing or strengthening rear axle)

- Apco Mfg. Co., 703 Eddy St., Providence, R. I.
- Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
- Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo.
- Brace-Rite—See Master Products Co.
- Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
- Christianson Harrow Works, Sioux Falls, S. Dak.
- Dependable—See Gahm-McCormick Co.
- Dow Co., Louisville, Ky. (See page 157.)
- Efemco—See Foster, Merriam & Co.
- Excelsior Auto Parts & Supply Co., Boston, Conn. (See page 163.)
- Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)
- Gahm-McCormick Co., 806 E. Main St., Streator, Ill. "Dependable." (See page 171.)
- Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 933.)
- Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
- Master Products Co., 1142 Belmont Ave., Chicago, Ill. "Brace-Rite."

Everything is listed under the NOUN or principal word

Connecting Rods

for Automobiles, Tractors, Trucks, Aero-
planes, Motorcycles and Motor Boats

Plain and Castle Nuts

Automatic and Hand Screw Machine Products

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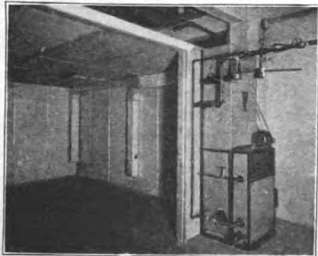
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machined by a new method from
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They are round, fit shallow
grooves accurately and expand
with uniform radial pressure.
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RODS, Rear Axle Truss, for Fords (Continued)

Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.
 Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.
 Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. (See page 759.)
 Sterling—See Republic Auto Parts Co.
 Sunvold & Larson Mfg. Co., Sacred Heart, Minn.
 W-A—See Whetstone & Co., John H. Whetstone & Co., John H. Court St., Lapeer, Mich. "W-A."
 Worthington, A. P., 700 N. Main St., Los Angeles, Cal.

RODS, RUBBER—See Rubber, Hard

RODS, STEEL—See Steel

RODS, STEERING—See Connections, Steering

RODS, STEERING, FOR FORDS—See Links, Steering

RODS, TRUSS FOR FORDS—See Rods, Rear Axle Truss

RODS, VALVE LIFT—See Rods, Adjustable Valve

RODS, Welding

Carbox—See Central Steel & Wire Co.
 Central Steel & Wire Co., 119 N. Peoria St., Chicago, Ill. "Swedox," "Lektrox," "Cra-box," "Nonox," "Castox," "Vanox," "Kromox."
 Castox—See Central Steel & Wire Co.
 Ever-Stay Sales Co., 1501 Jackson St., Omaha, Neb. (See page 453.)
 Eagle Smelting & Refining Works, Trenton, N. J.
 Kromox—See Central Steel & Wire Co.
 Lektrox—See Central Steel & Wire Co.
 Nonox—See Central Steel & Wire Co.
 Swedox—See Central Steel & Wire Co.
 Trenton Smelting & Refining Co., Canal & Pearl Sts., Trenton, N. J.
 Vanox—See Central Steel & Wire Co.

ROLLER BEARINGS—See Bearings, Roller

ROLLER BEARINGS FOR FORDS—See Bearings, Drive Gear, Ball and Roller Thrust

ROLLER CHAINS—See Chain, Transmission

ROLLERS, Curtain

(For curtains in limousines or other closed cars)

A & E Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.

Carey-McFall Co., 2156 E. Dauphin St., Philadelphia, Pa. "Edw. Reukauf."
 Cowles & Co., C., New Haven, Conn. (See page 451.)
 Curtain Supply Co., 350 W. Ontario St., Chicago, Ill. "Rex."
 Edw. Reukauf—See Carey-McFall Co.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Hartshorn Co., Stewart, 250 Fifth Ave., New York, N. Y.
 Rex—See Curtain Supply Co.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributors.) (See page 81.)
 Ternstedt Mfg. Co., Detroit, Mich. (See Back Cover.)
 Waterhouse & Freeman Mfg. Co., 319 N. J. R. R. Ave., Newark, N. J.
 White Mfg. Co., 155 Cannon St., Bridgeport, Conn.

ROLLERS, TIMER, FOR FORDS—See Brushes, Timer

ROLLING MACHINES—See Machines, Fender Rolling

ROLLS, TOOL—See Bags, Tool

ROOF VENTILATORS—See Ventilators, Limousine Roof

ROOMS, DRYING—See Rooms, Paint and Varnish Drying

ROOMS, Paint and Varnish Drying

Drying Systems, 11 S. Desplaines St., Chicago, Ill. "Greeff." (See page 729.)
 Greeff—See Drying Systems.

ROPE CLAMPS—See Clamps, Wire Rope

ROPE or CABLE, Bronze Wire

(For operating brakes or out-outs)

American Brass Co., Waterbury, Conn.
 Elephant—See Phosphor Bronze Smelting Co.
 Omega—See Riverside Metal Co.
 Phosphor Bronze Smelting Co., 2200 Washington Ave., Philadelphia, Pa. "Elephant." (See page 583.)
 Reeves & Co., Paul S., 1415-25 Catherine St., Philadelphia, Pa.
 Riverside Metal Co., Riverside, N. J. "Omega."

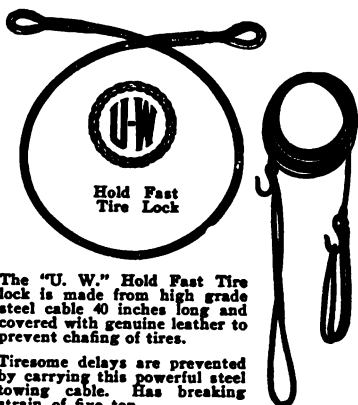
ROPE or CABLE, Steel Wire

(For operating brakes or out-outs)

American Steel & Wire Co., Chicago, Ill.
 Atlas—See Fischer & Hayes Rope & Steel Co.
 Broderick & Bascom Rope Co., 805 N. Main St., St. Louis, Mo.
 Fischer & Hayes Rope & Steel Co., 741 Van Buren St., Chicago, Ill. "Atlas."
 Hazard Mfg. Co., 81 E. Ross St., Wilkes-Barre, Pa.
 Roeblings Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.
 Trenton Iron Co., Trenton, N. J.
 Waterbury Co., 62 Park Row, New York, N. Y.

Everything is listed under the NOUN or principal word

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The "U. W." Hold Fast Tire lock is made from high grade steel cable 40 inches long and covered with genuine leather to prevent chafing of tires.

Tiresome delays are prevented by carrying this powerful steel towing cable. Has breaking strain of five ton.

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By means of our simple converting unit all demountable passenger and truck rims can be fitted with DALY SIMPLEX drop forged chrome steel attachments. This DALY SIMPLEXING process makes you your own manufacturer as well as distributor; no large stock of rims to carry and no heavy overhead charges.

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LOS ANGELES, CALIFORNIA

Please mention The Automobile Trade Directory

ROPES, CHAINS and BARS, Tow

American—See Service Station Equipment Co.
American Chain Co., Bridgeport, Conn.
(See page 329.)

American Steel & Wire Co., Chicago, Ill.

Au-To-To—See Walte-Rhoads Co.

Badger Mfg. Corp., Milwaukee, Wis.
(See page 171.)

Basline Autowline—See Broderick & Bascom Rope Co.

Bellevue Mfg. Co., Bellevue, O. "Buck-eye." (See page 169.)

Berger & Co., 208 W. 11th St., Los Angeles, Cal. "Berline Kant Kink."

Berline Kant Kink—See Berger & Co.

Broderick & Bascom Rope Co., 805 N. Main St., St. Louis, Mo.

Buckeye—See Bellevue Mfg. Co.

Bull Dog—See Chain Products Co.

Chain Products Co., 3224 Cooper Ave., Cleveland, O. "Bull Dog."

Channon Co., E., 150 N. Market St., Chicago, Ill.

Cleveland Chain & Mfg. Co., Cleveland, O.

Columbus McKinnon Chain Co., Columbus, O. "Inswell."

Cooper Mfg. Co., Marshalltown, Ia.
(See page 574.)

Danielson Tool Co., Fulton St., Wausau, Wis.

Dyer Co., 155 Brookline St., Cambridge, Mass.

Edstrom Machinery Co., Cary, Ill. "Kant Kink." (See page 733.)

Excelsior—See Wickwire Spencer Steel Corp.
Fischer & Hayes Rope & Steel Co., 741 Van Buren St., Chicago, Ill.

Fulton Co., Dept. S, 75th and National Aves., Milwaukee, Wis. (Distributors.)
(See pages 569 to 574.)

Hercules—See Leschen & Sons Rope Co.

Hinckley-Myers Co., Water St., Jackson, Mich.

Hite Mfg. Co., 833-35 Missionary Ave., Chattanooga, Tenn. "S-O-S."

Hogarty, Edward, Mill St., Unionville, Conn. "Utility."

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Buckeye.) (See page 179.)

Inswell—See Columbus McKinnon Chain Co.
K-H-K—See Kay Co.

Kant-Kink—See Edstrom Machinery Co.

Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "K-H-K."

Keepers, J. C., 213 W. Park St., Olathe, Kans.

Kimkin—See Kimmerle Bros.

Kimmerle Bros., 683 Golden Gate Ave., San Francisco, Cal. "Kimkin."

Leader Skid Chain Co., 4104 Manchester Ave., St. Louis, Mo.

Leschen & Sons Rope Co., A., 5909 Kennerly Ave., St. Louis, Mo. "Hercules."

Newhall Chain Forge & Iron Co., 90 West St., New York, N. Y.

Robinson-Carter Co., 1711 Grand Ave., Kansas City, Mo.

Rochester Rope Goods Co., 230 Florida St., Milwaukee, Wis.

Rusco—See Russell Mfg. Co.

Russell Mfg. Co., Middletown, Conn. "Rusco." (See page 530.)

S-O-S—See Hite Mfg. Co.

Service Station Equipment Co., 37th St. and S. Ashland Ave., Chicago, Ill. "American."

Simplicity Products Mfg. Co., Milwaukee, Wis.

Smith Mfg. Co., C. F., 530 S. First St., De Kalb, Ill.

Superior Mfg. Co., High Ave. at Second St., Cleveland, O.

U. W.—See Upson-Walton Co.

United States Chain & Forging Co., Pittsburgh, Pa. (See page 231.)

Universal Safety Towing Bar Co., 691 Parkside Ave., Buffalo, N. Y.

Upson-Walton Co., 1810 W. 11th St., Cleveland, O. "U. W." (See page 731.)

Utility—See Hogarty, Edward.

Walte-Rhoads Co., 1455 S. Broadway, Denver, Colo. "Au-To-To."

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 753.)

Wickwire-Spencer Steel Corp., Worcester, Mass. (See page 794.)

Wisconsin Welding & Cutting Co., 413 Sixth St., Milwaukee, Wis.

(See page 821.)

ROTARY CUTTERS—See Saws and Cutters, Rotary

ROTARY HACK SAWS—See Saws and Cutters, Rotary

ROTARY RASPS—See Tools, Tire Vulcanizing

ROTARY SHEARS—See Shears, Rotary

ROTATORS, Valve

Garlock Valve Rotator Co., 201 Paterson St., Paterson, N. J.

ROUGH STUFF—See Fillers, Paint

RUBBER BATTERY JARS—See Jars, Rubber Battery

RUBBER BUCKETS—See Buckets, Collapsible

RUBBER BUMPERS—See Bumpers, Rubber Spring

RUBBER CEMENT—See Cement, Tire; also Tubing, Soft Rubber

RUBBER COATED CLOTH—See Cloth, Rubber Coated

RUBBER CONNECTORS—See Tubing, Soft Rubber

RUBBER CORD, AIRPLANE—See Cord, Airplane Rubber

RUBBER CUTTING KNIVES—See Knives, Tire Repair

RUBBER GAS BAGS—See Bags, Rubber Gas

RUBBER GASKETS—See Packing

RUBBER GLOVES—See Gloves, Rubber

RUBBER HAMMERS—See Mallets, Rubber

RUBBER, Hard

(Sheet, Rod and Tube)

American Hard Rubber Co., 11 Mercer St., New York, N. Y.

Dugas-Hundley Corp., 29 W. 34th St., New York, N. Y. "Reliance."

Luzerne Rubber Co., Muirhead Ave., Trenton, N. J.

Reliance—See Dugas-Hundley Corp.

Stokes Rubber Co., Jos., Taylor St., Trenton, N. J.

Vulcanized Rubber Co., 251 Fourth Ave., New York, N. Y.

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TOWLINES TIRE LOCKS

The Edstrom Kant Kink Towline is the first towline to be offered to motorists that carries a guarantee against kinking. It is made of Special Steel cable that withstands greater stress and has smaller bulk than any other cable for the same load. The sling is of manila rope.

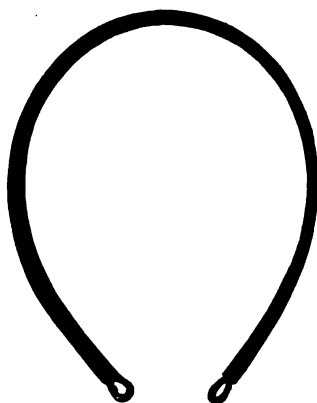
PRICES

1/4 Size	\$6.50
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Length 20 Feet	



Kant Kink Tire Locks are made of the same strand and are covered with high grade Chrome Tanned leather. They keep the spare where it belongs, and discourage the tire thief.

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The guarantee against kinking has a big appeal to the motorist. There will be a big demand. The profits are most satisfactory. Write us today for full details and our terms to the trade.

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RUBBER HORN BULES—See Bulbs, Rubber Horn

RUBBER HOSE—See Hose, Rubber

RUBBER MALLETS—See Mallets, Rubber

RUBBER MATS—See Mats, Rubber

RUBBER MATTING—See Mats, Rubber

RUBBER PACKING—See Packing, Rubber

RUBBER PAINTS—See Paints, Rubber

RUBBER PATCHES—See Patches, Tire Repair

RUBBER PLUGS—See Plugs, Tire Repair

RUBBER PRESERVATIVES—See Compounds, Tire Preserving

RUBBER PUTTY—See Compounds, Tire Repair

RUBBER RADIATOR CAPS—See Caps, Rubber Radiator

RUBBER ROD—See Rubber, Hard

RUBBER SHEET—See Rubber, Hard

RUBBER SPRING BUMPERS—See Bumpers, Spring

RUBBER TESTING INSTRUMENTS—See Instruments, Rubber and Felt Testing

RUBBER TIRES—See Tires

RUBBER TUBING—See Tubing, Soft Rubber

RUBBERS, TIRE PUMP CONNECTION—See Washers, Tire Pump

RUBBING MACHINES, BODY—See Machines, Body Rubbing

RUNNING BOARD BRACES FOR FORDS—See Braces

RUNNING BOARD MATS—See Mats, Step or Running Board

RUNNING BOARD MOULDING—See Moulding

RUNNING BOARD PLATES—See Plates, Heel and Pedal

RUNNING BOARD SUPPORTS—See Braces, Running Board

RUNNING BOARDS—See Boards, Running

RUNNING GEAR ALIGNERS—See Gages, Wheel Aligning

RUST PREVENTING COMPOUNDS—See Compounds, Rust Preventing

RUST PROOFING—See Galvanizing

RUST REMOVING COMPOUNDS—See Compounds, Rust Preventing

S-WRENCHES—See Wrenches, Nut and Bolt

SAFETY STARTING CRANKS—See Cranks, Safety

SAFETY TOW HOOKS—See Hooks, Safety Tow

SALTS, SOLDERING—See Flux, Solder

SAND PAPER—See Paper, Sand

SANDERS, Generator Brush for Fords

(Tools for cleaning and polishing brushes of starting and lighting generators.)

Hinckley-Myers Co., Water St., Jackson, Mich.

SAW BLADES—See Blades, Hack Saw

SAWS, Band

American Saw Mill Machinery Co., Hackettstown, N. J.

American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.

Bentel & Mergedant Co., Hamilton, O.

Cordesman, Myer & Co., 53-57 Central Ave., Cincinnati, O.

Cordesman-Rechtin Co., Cincinnati, O.

Crescent Machine Co., Leetonia, O.

Defiance Machine Works, 434 Perry St., Defiance, O.

Fay & Egan Co., J. A., Cincinnati, O.

Hall & Brown Woodworking Machine Co., Broadway & Ninth St., St. Louis, Mo.

Hiles & Co., C. A., 14th & Western Ave., Chicago, Ill.

Jones Superior Machine Co., 1253-72 W. North Ave., Chicago, Ill.

Kane & Roach, Niagara & Shonnard Sts., Syracuse, N. Y.

Marston & Co., J. M., 226-28 Ruggles St., Boston, Mass.

Power & Co., L., 20 S. 23d St., Philadelphia, Pa.

Prybill Machine Co., P., 512-24 W. 41st St., New York, N. Y.

Root Co., B. M., 30-36 Jefferson Ave., York, Pa.

Silver Mfg. Co., Salem, O.

Simonds Mfg. Co., 470 Main St., Fitchburg, Mass.

Smith Machine Co., H. B., Smithville, N. J.

Towsley Mfg. Co., John T., Gest & Evans Sts., Cincinnati, O.

Wallace & Co., J. D., 1401-05 W. Jackson Blvd., Chicago, Ill.

West Side Iron Works, 327-29 Front Ave., N. W., Grand Rapids, Mich.

SAWS, HACK—See Frames, Hack Saw; also Blades, Hack Saw

SAWS AND CUTTERS, Rotary

(For cutting holes in cowl boards for mounting instruments)

Irving, Robert M., Gurney Bldg., Syracuse, N. Y. "Misener."

Jiffy—See Koch & Co.

Koch & Co., Paul W., 21 S. Wells St., Chicago, Ill. "Jiffy."

Misener—See Irving, Robert M.

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Small Screws

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Dependable Screw Machine Products

**Auto, Truck, Tractor and Engine
Parts Furnished Complete**

Service—Quality Assured

**Replace Parts for Popular Cars
Guaranteed to Fit**

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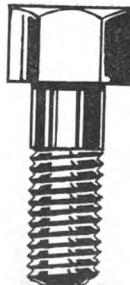
Our whole organization is completely up-to-date—our equipment, our methods, our manufacturing system, all are thoroughly modern. Our men are experienced and skilled specialists. Many rigid inspections and severe tests, covering every operation from the selection of the material to the last work on the finished product enable us to guarantee our products to be uniform and absolutely free from defects.

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(Covering only Electrical Schools advertised in this publication)

N. Y. Electrical School, 47 W. 17th St., New York, N. Y. (See page 751.)

SCORED CYLINDERS, REPAIRING OF—
See Cylinders, Scored, Repairing of**SCRAPERS, Bearing**

Alert Tool Co., 237 N. Sixth St., Philadelphia, Pa.

Bicknell Mfg. & Supply Co., 22 N. Academy St., Janesville, Wis.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Buffum Tool Co., Louisiana, Mo.
(See page 883.)

Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal. "Ideal."

Goodell-Pratt Co., Greenfield, Mass.

Harrold Tool & Forge Co.—See Wiebusch & Hilger.

Hayes File Co., 1986 Franklin St., Detroit, Mich.

Ideal—See Gogle Hand-Forged Tool Co.

Kraeuter & Co., Newark, N. J.
(See page 643.)

Mound Tool Co., Dept. D., Seventh & Hickory Sts., St. Louis, Mo.
(See page 887.)

Osborne & Co., C. S., Newark, N. J.

Storts & Son, John, 3010-12 Vine St., Philadelphia, Pa.

Taber Mfg. Co., 1227 Woolsey St., Berkeley, Cal.

Vichek Tool Co., 3000 E. 87th St., Cleveland, O.

Wiebusch & Hilger, 110 Lafayette St., New York, N. Y. (Sole Selling Agents for Harrold Tool & Forge Co., Columbiana, O.)

SCRAPERS, Carbon

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Buffum Tool Co., Louisiana, Mo.
(See page 883.)

Chapman Bros. Co., Saybrook, Conn. "Saybrook."

Flexible Carbon Scraper Co., 1421 W. Washington St., Los Angeles, Cal.

Marcy Tool Works, Putnam, Conn.

Maximus—See Taunton Tool Co.

Mound Tool Co., Dept. D., Seventh & Hickory Sts., St. Louis, Mo.
(See page 887.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Osborne & Co., C. S., Newark, N. J.

Saybrook—See Chapman Bros Co

Taunton Tool Co., 49 Adams St., Taunton, Mass. "Maximus."

SCRAPERS, Foot

(For attachment to running board for scraping dirt or mud from the feet before entering car; for running board mats—See Mats, Running Board)

Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill. "Klean-Kar."

International Stamping Co., 400 N. Leavitt St., Chicago, Ill. (See page 467.)

Klean-Kar—See Armand Machine Works.

Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.

Stanwood Equipment Co., 308 N. Michigan Blvd., Chicago, Ill.

SCRAPERS, STORAGE BATTERY BOX—
See Tools, Storage Battery Repair**SCREENS, SUN—See Visors, Wind Shield****SCREENS, Wire Windshield**

Mac Comfort Screen Co., Louisville, Ky.

Webb Auto Screen Co., Brainerd, Minn.

SCREW CASES—See Cases, Bolt**SCREW CUTTING DIES—See Taps and Dies****SCREW DRIVERS—See Drivers, Screw****SCREW DRIVING MACHINES—See Machines, Screw Driving****SCREW-EYES, Brass and Iron**

Hindley Mfg. Co., John St., Valley Falls, R. I.
Sargent Co., Water & Wallace Sts., New Haven, Conn.

Wire Goods Co., 28 Union St., Worcester, Mass.

SCREW MACHINE PRODUCTS TO ORDER

Acme Engineering & Mfg. Co., 855 Union Park Ave., Chicago, Ill.

Acme Mfg. Co., Boonton, N. J.

Acorn Motor Equipment Corp., 44 Penn St., Brooklyn, N. Y. (See page 121.)

Advance Mfg. & Tool Co., 2741 E. 97th St., Cleveland, O.

Advance Tool Works, 2300 Warren Ave., Chicago, Ill.

Aetna Screw & Bolt Co., 213 N. Desplaines St., Chicago, Ill.

Ainge Tool, Die & Machine Works, Geo. H. Springfield, O.

Akins Machine Co., Wm. C., 1 Gleason Pl., Rochester, N. Y.

Akron-Selle Co., High & Chestnut Sts., Akron, O.

Albaugh-Dover Co., 2100 Marshall Blvd., Chicago, Ill.

Albrass Co., Coxsackie, N. Y.

American Brass Novelty Co., Grand Haven, Mich.

American Brass Products Co., Pottstown, Pa.

American Die & Tool Co., Reading, Pa.
(See page 420.)

American Multigraph Co., Cleveland, O.

American Steam Gauge & Valve Mfg. Co., 208-20 Camden St., Boston, Mass.

Ansonia Mfg. Co., Ansonia, Conn.

Arlington Machine Works, 668-74 Jenks St., St. Paul, Minn.

Artistic Bronze Co., 2050 Fairfield Ave., Bridgeport, Conn.

Ashley Machine Works, 724 University Ave., Rochester, N. Y.

Atlantic Mfg. Co., Milford, Conn.

Atlas Brass Foundry Co., Columbus, O.
(See page 551.)

Attwood Brass Works, Grand Rapids, Mich. (See page 147.)

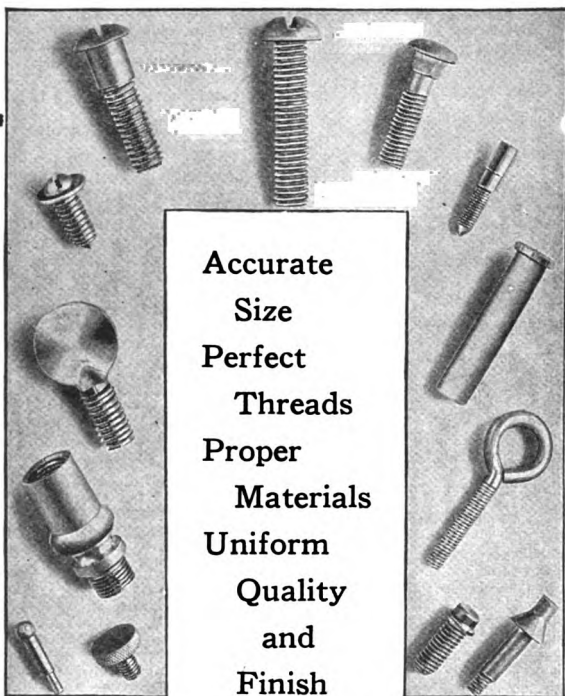
Auto Engineering Co., 1535 Temple Ave., Detroit, Mich. (See page 85.)

Automatic Products Co., 1145 W. Grand Blvd., Detroit, Mich. (See page 739.)

Automatic Products Corp., 199-203 Eighth St., Long Island City, N. Y.

Automatic Screw Machine Products Co., 3425 W. 31st St., Chicago, Ill.

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will be found in each individual rivet, screw, nut, stud, pin, or electrode we manufacture.

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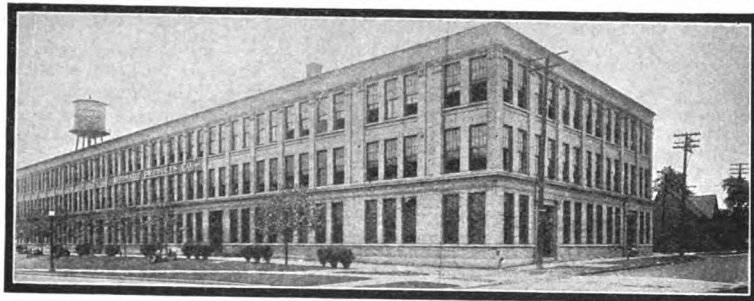
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Automobile Screw Products Co., 1170 E. 152nd St., Cleveland, O.
 B & S Mfg. Co., 891 Cypress Ave., Brooklyn, N. Y.
 Babson-Dow Mfg. Co., 60 Fulda St. (Roxbury), Boston, Mass.
 Bard Mfg. Co., Royersford, Pa. (See page 149.)
 Barnes Co., Wallace, Bristol, Conn.
 Becco—See Michigan Motor Specialties Co.
 Bell Co., 1557 Fillmore Ave., Buffalo, N. Y. (See page 741.)
 Belvidere Screw & Machine Co., E. Madison St., Belvidere, Ill.
 Bertelsmann Co., Glenn, 1109-17 Hamilton Ave., Indianapolis, Ind.
 Bertschy Engineering Co., 802 N. 16th St., Omaha, Neb.
 Bilton Machine Tool Co., Bridgeport, Conn. (See page 559.)
 Blair Tool & Machine Works, 521 Greenwich St., New York, N. Y.
 Blake & Johnson Co., Waterbury, Conn. (See page 737.)
 Blount Engineering Co., 100 High St., Boston, Mass.
 Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.
 Bowen Products Corp., Auburn, N. Y. (See page 313.)
 Breslove Screw Products Co., 12-14 S. Jefferson St., Chicago, Ill.
 Brewster & Co., Queensboro Bridge Plaza, Long Island City, N. Y.
 Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.
 Brown Bag Filling Machine Co., 10 Main St., Fitchburg, Mass.
 Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
 Brown-McLaren Mfg. Co., 5853-81 W. Fort St., Detroit, Mich.
 Bryan Screw Machine Products Co., Willson St., Bryan, O.
 Burgess-Norton Mfg. Co., Dept. D. 532-44 Peyton St., Geneva, Ill. (See page 627.)
 C. H. P. Machine Co., 107 W. 56th St., New York, N. Y. (See page 735.)
 Campbell Mfg. Co., Slater Bldg., Worcester, Mass.
 Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. (See pages 607 and 741.)
 Central Machine Works, 1911 N. 12th St., St. Louis, Mo.
 Central Machine Works, 19 Church St., Worcester, Mass.
 Central Service Corp., 1007 Merchants' Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
 Chadbourne-Walker Machine Screw Co., 100 Sudbury St., Boston, Mass.
 Chapman Co., Berlin, Wis.
 Chelsea Screw Co., S. Main St., Chelsea, Mich.
 Chicago Automatic Machine Co., 400-08 N. Oakley Ave., Chicago, Ill.
 Chicago Metal Products Co., 501 S. Jefferson St., Chicago, Ill.
 Chicago Nut Co., 2513-39 W. 20th St., Chicago, Ill.
 Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 499 and 743.)
 Cincinnati Ball Crank Co., Cincinnati, O. (See page 498.)
 Cincinnati Machine Products Co., 3089 Colerain Ave., Cincinnati, O.

Cincinnati Screw Co., Twilight, O. (See page 735.)
 City Iron Works & Machine Co., 530 S. Delaware Ave., Philadelphia, Pa.
 Clark-Cadle-Harmon Corp., 1139 University Ave., Rochester, N. Y.
 Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.
 Cleveland National Machine Co., 1266 W. 70th St., Cleveland, O.
 Cleveland Wrought Products Co., W. 58th St., South of Denison, Cleveland, O.
 Coful Auto Parts Co., National City Bank Bldg., Cleveland, O. (Manufacturers' Agents.) (See page 509.)
 Cogswell Mfg. Co., 85 Hall St., Springfield, Mass.
 Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.
 Colson Co., Elyria, O.
 Columbus Auto Parts Co., 215 E. Russell St., Columbus, O.
 Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.
 Commonwealth Screw Co., 26 Bartlett St., Worcester, Mass.
 Connery Machine & Tool Co.—See Ryerson & Son.
 Corbin Screw Corp., 227 High St., New Britain, Conn.
 Crittenden Mfg. Co., 3380 Washington St., Boston, Mass.
 Cummings Co., Harry, Syracuse, N. Y.
 Curtis Screw Works, 17 Gull St., Buffalo, N. Y.
 D. & D. Machine & Tool Co., 16-20 Jefferson Ave., Elizabeth, N. J.
 Dallett Co., Thos. H., 1324 Federal St., Philadelphia, Pa.
 Davis Sewing Machine Co., Linden & Davis Aves., Dayton, O.
 Delaware Engineering Co., C. & Buttonwood Sts., Wilmington, Del.
 Detroit Machine Tool Co., 6545 St. Antoine St., Detroit, Mich.
 Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
 Diuguid Bros., 975 Atlantic Ave., Brooklyn, N. Y.
 Dorchester Machine & Tool Works, 70 Freeport St., (Dorchester) Boston, Mass.
 Duck Co., William B., 224-26 Superior St., Toledo, O.
 E. H. Machine Co., 234 Maple St., Weehawken, N. J.
 E. C. Mfg. Co., Chicago, Ill.
 Eastern Machine Screw Corp., 20-40 Barclay St., New Haven, Conn.
 Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.
 Empire Mfg. Co., Ford St. nr. Bloomfield Ave., Newark, N. J.
 Enterprise Mfg. Co., Bowery & Center Sts., Akron, O.
 Ericsson Screw Machine Products Co., 697-09 Bergen St., Brooklyn, N. Y.
 Erie Bronze Co., 355 W. 10th St., Erie, Pa. (See page 207.)
 Erie Specialty Co., Erie, Pa.
 Eureka Co., North East, Pa.
 Eveready-Mfg. Co., 9 Knapp St., Boston, Mass.
 Farley Mfg. Co., 624 N. Union St., Decatur, Ill.
 Federal Equipment & Supply Co., 293 Broadway, New York, N. Y.
 Federal Machine Products Co., 6442 Farnsworth St., Detroit, Mich.
 Federal Screw Works, 4725 Ellery St., Detroit, Mich.
 Fernald Mfg. Co., North East, Pa. (See page 75.)

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Automatic Products Co.

1145 West Grand Boulevard

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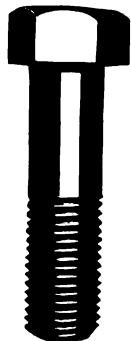
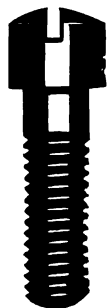
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Products for Automobiles, Trucks,

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Cap Screws, Conn. Rod
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Studs, Special Parts.



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Ferry Cap & Set Screw Co., Cleveland, O. (See page 743.)
 Fischer Special Mfg. Co., 2076-78 Reading Rd., Cincinnati, O.
 Fischer Spring Co., Chas., 478 Kent Ave., Brooklyn, N. Y.
 Flannery Co., P. J., 33 Whiting St., New Britain, Conn.
 Fostoria Screw Co., E. Railroad St., Fostoria, O.
 Framingham Screw Works, 88 Howard St., Framingham, Mass.
 Franklin Machine & Tool Co., Springfield, Mass. (See page 509.)
 Garvin Machine Co., Spring & Varick Sts., New York, N. Y.
 General Automotive Co., 18th & O Sts., Lincoln, Neb. "Staround."
 General Machine Works, Lamour & Prospect Sts., York, Pa.
 Gilmour, J. Morrison, 149-51 Lafayette St., New York, N. Y.
 Gleason-Peters Air Pump Co., 324 Classon Ave., Brooklyn, N. Y.
 Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
 Gordon-Little Co., 122-30 N. Senate Ave., Indianapolis, Ind.
 Gould-Mersereau Co., 42 W. 38th St., New York, N. Y.
 Grand Rapids Brass Co., 90 Scribner Ave. N. W., Grand Rapids, Mich.
 Grand Tool & Machine Works, 161 Grand St., New York, N. Y.
 Greer, Frederic, 2427 Michigan Ave., Chicago, Ill.
 Greist Mfg. Co., New Haven, Conn. (See page 559.)
 Gwynn Engineering Co., 100 Liberty Ave., Pittsburgh, Pa.
 H. K. Metal Products Co., 60 Grand St., New York, N. Y.
 Hall Lamp Co., C. M., Detroit, Mich.
 Hall Machine & Tool Co., 116 Chestnut St., Providence, R. I.
 Hammarlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.
 Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Hanney Stamping Works, 2102 Woodbridge St., Detroit, Mich.
 Hanson Bros., 528-48 Southington Ave., Plainville, Conn.
 Harper Screw Works, F. C., 29 S. Clinton St., Chicago, Ill.
 Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.
 Hartford Machine Screw Co., Hartford, Conn. (See page 741.)
 Henry Mfg. Co., G. J., 2262-70 W. Grand Ave., Chicago, Ill.
 Higginson-Gibson Mfg. Co., 76 Atherton St., (Jamaica Plain), Boston, Mass.
 Hill Co., Geo. Q., 32-34 Dorchester Ave., Boston, Mass.
 Hill Pump Valve Co., Belmont & Knox Aves., Chicago, Ill.
 Hoerner Mfg. Co., 3929 Moneta Ave., Los Angeles, Cal. (See page 879.)
 Hub Engineering & Machine Co., Hamilton St., Bound Brook, N. J.
 Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.
 Humason Mfg. Co., Forestville, Conn.

Hyklas—See Parts Service Co.
 Hyman & Co., Henry, 476 Broadway, New York, N. Y.
 Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.
 Iles Mfg. Co., E. W., Shelton, Conn.
 Illinois Mfg. & Supply Co., 1455 S. Michigan Ave., Chicago, Ill.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Indianapolis Tool & Mfg. Co., Indianapolis, Ind. (See page 425.)
 K. & Z. Automatic Screw Co., Defiance, O.
 Kamco Corp., 34 Barclay St., New York, N. Y.
 Keavaney & Son, W. R., 135 Bunker Hill Rd., Waterbury, Conn.
 Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.
 Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.
 Kihm-Bowen Machine Co., 146 Colt St., Irvington, N. J.
 Kineto Machine Co., 229 Plymouth St., Chicago, Ill.
 King Sewing Machine Co., 90 Welland St., Buffalo, N. Y.
 Klein, Adolph, 174 Centre St., New York, N. Y.
 Koehler Mfg. Co., Marlboro, Mass.
 Krahn Mfg. Co., 588 Clinton St., Milwaukee, Wis.
 Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.
 Lagerholm Co., E., 9 S. Clinton St., Chicago, Ill.
 Lakewood Screw Machine Products Co., Cleveland, O.
 Landis & Sons, A. B. (Chestnut Hill), Philadelphia, Pa.
 Lazarides Mfg. Co., 56 Beekman St., New York, N. Y.
 Lederer Bros. Co., 100 Stewart St., Providence, R. I. (See page 745.)
 Lehigh Engineering Co., Royersford, Pa.
 Levy, Benj., 355 W. Broadway, New York, N. Y.
 Lewis & Milligan, 2108 Boulevard Pl., Indianapolis, Ind.
 Liberty Screw Co., 222 Shrewsbury St., Worcester, Mass.
 Liberty Tool & Gauge Works, 222 Beacon St., Woonsocket, R. I.
 Linden & Co., 891 Broad St., Providence, R. I.
 Lippincott-Carver Corp., Erie Ave. & Richmond St., Philadelphia, Pa.
 Lynn Machine & Screw Co., 496 Washington St., Lynn, Mass.
 McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.
 McCully, R. P. & C. H., 331-35 Van Buren St., Brooklyn, N. Y.
 McKenna Brass & Mfg. Co., First Ave. & Ross St., Pittsburgh, Pa.
 Mann Corp., Kankakee, Ill.
 Mann Mfg. Co., 454-66 Golden Gate Ave., San Francisco, Cal.
 Mantle & Co., 1907 Park Ave., New York, N. Y.
 Manufacturers Machine Products Co., 1220-68 Mt. Elliot Ave., Detroit, Mich.
 Marion Screw & Machine Co., 17 N. Fifth St., Philadelphia, Pa.
 Marquette Metal Products Co., 6545 Carnegie Ave., Cleveland, O.
 Mattatuck Mfg. Co., 100 Southmayd St., Waterbury, Conn.
 May Automatic Products Co., 2157 Howard St., Detroit, Mich.
 Mead & Cross Co., 309 Lafayette St., New York, N. Y.
 Meisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 425.)
 Merit Machine Mfg. Corp., 465 Greenwich St., New York, N. Y.

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Light Metal Parts for the Automobile Industry

We have the most completely equipped plant in the west for the manufacture and assembly of light metal parts of all kinds.

Our Specialties

Screw Machine Products	Stamping
up to 2½ inches	Small Gears
Milling	Bronze Bearings
Shaping	Bronze and Brass
Slotting	Casting, finished and unfinished.
Hardening	
Steel Treating and Grinding.	

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Strength—Accuracy—Service

Wide variety of automatic and hand screw machine products. Finished or semi-finished standard or special parts made from cold-drawn or hot-rolled special screw stock, alloy steel, iron, bronze, brass, monel metal or other bars.

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Pyrometer-controlled oil-burning furnaces for scientific heat treatment and casehardening.

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Back of every H. M. S. product is a reputation for exactness and reliability of 50 years' standing.



A complete line of standard set and cap screws—taper pins—S. A. E. standard screws and nuts—all milled from the bar.

Hartford Machine Screw Company

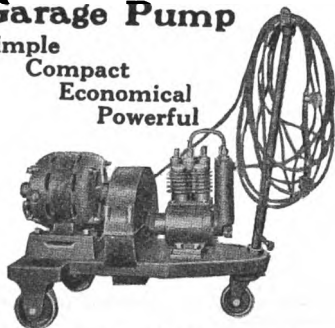
Hartford, Connecticut

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Garage Pump

Simple
Compact
Economical
Powerful



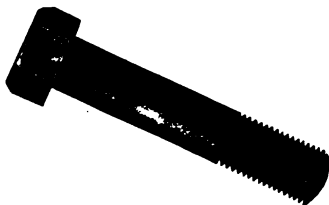
Various types to meet every tire inflation requirement. No tanks. Write for catalogue. Price \$75.00 to \$200.00.

SCREW Machine Products to Order (Continued)

- Meta Goods Mfg. Co., 566 Commercial St., Boston, Mass.
- Meta Industries Service Co., Cleveland, O.
- Meta Machining Tool Co., 2176 E. 76th St., Cleveland, O.
- Metal Parts Mfg. Co., 1034 E. 152nd St., Cleveland, O.
- Meyer Mfg. Co., A. J., 817-21 John St., West Hoboken, N. J.
- Michigan Motor Parts Corp., 2124 Howard St., Detroit, Mich.
- Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
- Michigan Pattern & Machine Works, 3429-39 E. Jefferson Ave., Detroit, Mich.
- Michigan Screw Co., 806 S. Hosmer St., Lansing, Mich.
- Miles, Franklin S., 205-07 Quarry St., Philadelphia, Pa.
- Milholland Machine Co., 1102 W. 23rd St., Indianapolis, Ind.
- Milwaukee Screw Machine Products Co., Tenth St. & Cold Spring Ave., Milwaukee, Wis.
- Milwaukee Separator Mfg. Co., 247 Madison St., Milwaukee, Wis.
- Modern Machine Shop, 15th & Ried Sts., Philadelphia, Pa.
- Moesta & Ruehrwein, Hulbert Bldg., Cincinnati, O.
- Montgomery Tool & Mfg. Co., First & Madison Sts., Dayton, O.
- Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)
- Morris Machine Tool Co., Court & Harriet Sts., Cincinnati, O.
- Mossberg Co., Frank, Attleboro, Mass.
- Motovic Products Corp., 441 State St., Detroit, Mich.
- Mueller Metals Co., Lapier Ave., Port Huron, Mich.
- Multiple Spark Plug Mfg. Co., 138 Holden St., Minneapolis, Minn.
- Muncie Cap & Set Screw Co., Willard St. & Hoyt Ave., Muncie, Ind.
- National Acme Co., Cleveland, O. (See page 601.)
- National Engineering Co., Broad & Chestnut Sts., Philadelphia, Pa.
- National Lock Washer Co., 40 Hermon St., Newark, N. J.
- National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.
- National Sewing Machine Co., Belvidere, Ill.
- National Steel Products Co., 2270 Franklin St., Detroit, Mich.
- Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
- Nelson Tool Co., 782 E. 142d St., New York, N. Y.
- New Britain Machine Co., Chestnut St., New Britain, Conn.
- New Haven Screw Co., 191-93 Foster St., New Haven, Conn.
- Newton Machine Screw Co., 19 Craft St., Newtonville, Mass.
- Newton Mfg. Co., Plainville, Conn. (See page 315.)
- Niagara Brass Mfg. Co., Lockport, N. Y.
- North Star Specialty Co., 1834 University Ave., St. Paul, Minn.
- Northwestern Machine Corp., 2621 N. 22d St., St. Louis, Mo.
- Ohio Metal Products Co., Detroit, Mich.
- Olson Mfg. Co., 54 Commercial St., Worcester, Mass.
- Ontario Machine Screw Co., Ontario & Roher St., Philadelphia, Pa.
- Ottmiller Co., Wm. H., Pattison St., & M. & P. R. R., York, Pa.
- Otto Metal Goods Corp., Wm. H., 401-07 St. Paul's Ave., Jersey City, N. J.
- P. & C. Nut Co., 519 Water St., Jackson, Mich.
- Paramount Mfg. Co., Westfield, N. J.
- Park Mfg. Co., 47 Lagrange St., Worcester, Mass. (See page 613.)
- Parker & Harper Mfg. Co., 18 Grafton St., Worcester, Mass.
- Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
- Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hykias." (See page 149.)
- Peerless Automatic Machine Co., 1970 W. 77th St., Cleveland, O.
- Peninsular Products Co., Detroit, Mich. (See page 629.)
- Pennsylvania Shaffting Co., Spring City, Pa.
- Perfection Parts Mfg. Co., 2401 Superior St. W., Cleveland, O.
- Perry-Fay Mfg. Co., Cleveland St., Elyria, O.
- Pheoll Mfg. Co., 5750 W. Roosevelt Rd., Chicago, Ill.
- Philadelphia Machine Screw Works, 624-26 Race St., Philadelphia, Pa.
- Phillips, F. C., Hill St., Stoughton, Mass.
- Phoenix Mfg. Co., Grand River at Loraine, Detroit, Mich. (See page 725.)
- Pittsburgh Reinforced Braxing & Machine Co., 3535 Liberty Ave., Pittsburgh, Pa.
- Poorman, J. E., 1825 Bristol St., Philadelphia, Pa.
- Porter & Co., W. S., 141-43 W. Austin Ave., Chicago, Ill.
- Precision Machine Co., 1029 Superior St., Indianapolis, Ind.
- Proviso Tool & Machine Co., 6 N. Eighth Ave., Maywood, Ill.
- Racine Screw Works, 1501 Clark St., Racine, Wis.
- Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
- Recording Devices Co., 584 W. Fifth St., Dayton, O.
- Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
- Reflex Ignition Co., 3066 W. 106th St., Cleveland, O. (See page 647.)
- Reliable Machine Co., 5320 St. Clair Ave., N. E., Cleveland, O.
- Reliance Engineering Co., Lansing, Mich.
- Rhode Island Tool Co., Providence, R. I.
- Ross Machine Co., 712-13-15 W. Seventh St., Lafayette, Ind.
- Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.
- Rutter, Arthur T., 256 Broadway, New York, N. Y.
- S. A. Machine Co., 2114 E. Woodbridge St., Detroit, Mich.
- S-P Mfg. Co., 872 E. 72nd St., Cleveland, O.
- St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
- Sandow Tool Co., 570-76 W. Broadway, New York, N. Y.
- Sanford Mfg. Co., F. C., 3060 Fairfield Ave., Bridgeport, Conn.
- Saxon Mfg. Co., 1034-40 Grand Ave., Toledo, O.
- Schaefer Mfg. Co., Pearl St., Berlin, Wis.
- Schnerr Co., J. J., 799 Golden Gate Ave., San Francisco, Cal. (See page 429.)
- Seovill Mfg. Co., Waterbury, Conn. (See page 745.)
- Scott & Fitzer Machine Co., Locust Ave., Cleveland, O.
- Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.
- Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.

Everything is listed under the NOUN or principal word

Set Screws
Cap Screws
Studs
Taper Pins
Semi-Fin Nuts
Castle Nuts



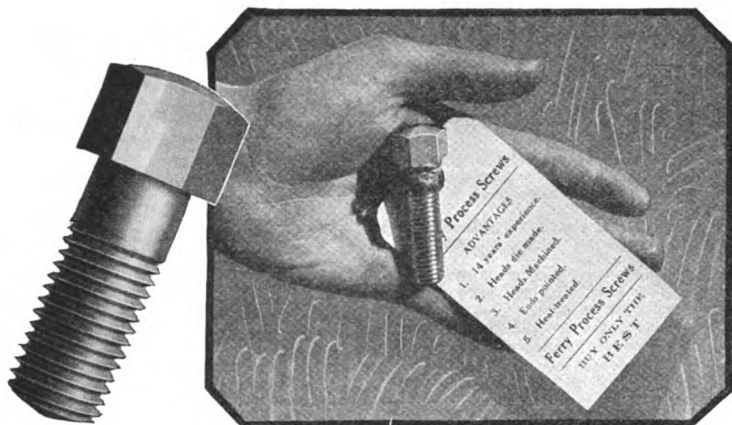
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Send for This Ideal Cap Screw

It is something every buyer of Cap Screws should have on his desk for comparative purposes. A specimen of the Ideal Cap Screw—the Ferry Process

Screw. Compare its superior quality and workmanship with other makes. Write or wire today for above sample and prices.

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Please mention The Automobile Trade Directory

SCREW Machine Products to Order (Continued)

Selik Bros., 2532 24th St., Detroit, Mich.
(See page 627.)

Service Gear & Machine Co., Second & Buttonwood Sts., Reading, Pa.

Shambow Shuttle Co., 601 N. Main St., Woonsocket, R. I.

Shawmut Iron & Wire Works, 97 Tileston St., Everett, Mass.

Sherman-Klove Co., 4640-48 W. Harrison St., Chicago, Ill. (See page 743.)

Simmons Mfg. Co., 4640-48 Perkins Ave., Cleveland, O.

Simplex Steel Stamping Co., 1926-28 Gravois Ave., St. Louis, Mo.

Simplex Tool Co., Social St., Woonsocket, R. I.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Smith Mfg. Co., F. H., 3037-47 Carroll Ave., Chicago, Ill.

Snow & Co., Albert E., 253 Broadway, New York, N. Y.

Spacke Machine & Tool Co., 600 Madison Ave., Indianapolis, Ind.

Spafford Machine Screw Works, 516 Asylum St., Hartford, Conn.

Special Hardware Corp., 181 S. Portland Ave., Brooklyn, N. Y. (See page 961.)

Specialty Products Co., 286 South St., Newark, N. J.

Spencer's Sons, I. S., Fair St., Guilford, Conn.

Staats & Co., Geo., 76 Bayard St., Brooklyn, N. Y.

Standard Pressed Steel Co., Philadelphia, Pa.

Standard Screw Products Co., 2559 Bellevue Ave., Detroit, Mich.

Standard Separator Co., Milwaukee, Wis.

Standard Turnbuckle Co., Corry, Pa.

Staround—See General Automotive Co.

Stearns Aero Parts Co., 203 St. Clair Ave., N. E., Cleveland, O.

Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.

Steger & Sons Piano Mfg. Co. (Industrial Division), Steger, Ill.

Steinen & Co., Wm., 297 Washington St., Newark, N. J.

Stephans Nut & Bolt Co., Main & Crawford Sts., Pawtucket, R. I.

Sterling Cork & Seal Co., 1612 Oakwood Ave., Toledo, O.

Sterling Specialty Co., New Comertown, O.

Stiles Mfg. Co., St. Louis, Mo.
(See page 471.)

Superior Mfg. Co., 1109 Race St., Philadelphia, Pa.

Swivel Joint & Shaft Co., Plymouth, Ind.
(See page 751.)

Swope-McCracken Co., 7720 Gratiot Ave., Detroit, Mich.

Thomaston Mfg. Co., Thomaston, Conn.

Tock Screw Machine Products Corp., 199-203 Eighth St., Long Island City, N. Y.

Toledo Automotive Products Co., 2240 Smead Ave., Toledo, O.

Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.

Triangle Tool & Die Co., 211 Smith St., Rochester, N. Y.

Union Cap Screw Co., 2262 Hendrie Ave., Detroit, Mich.

Union Tool Co., 48 E. River St., Orange, Mass.

United Manufacturing & Distributing Co., Lake Shore Drive and Ohio St., Chicago, Ill.

U. S. Automatic Co., Amherst, O.

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.

Universal Auto Parts Co., 268 Nartilla St., Portland, Ore. (Distributors.)
(See page 157.)

Universal Machine Co., 501-09 E. Preston St., Baltimore, Md.

Up-to-Date Machine Works, 2915 Wabash Ave., Chicago, Ill. (See page 735.)

Vahan Products Co., E. 73rd St. & St. Clair Ave., N. W., Cleveland, O.

Viking Tool & Machine Co., 56th St., bet. Seventh & Eighth Aves., Brooklyn, N. Y.

Vogel & Bros., Wm., 37 S. Ninth St., Brooklyn, N. Y.

Vulcan Auto Parts Co., 2126-30 Race St., Philadelphia, Pa.

Ware Bros., Automatic Products, 224 N. Ada St., Chicago, Ill.

Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.

Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.

Watkins & Co., D. M., 95 Pine St., Providence, R. I. (See page 735.)

Watkins Nut Co., 2013 Franklin St., Detroit, Mich.

Weiss, L. T., 295 Taaffe Pl., Brooklyn, N. Y.

Wellman Products Co., 1444 E. 49th St., Cleveland, O.

Western Automatic Machine Screw Co., Elyria, O.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
(See page 471.)

Western Screw-Products Co., St. Louis, Mo. (See page 749.)

Wheeler & Son, Frank, 55 Stone St., Meriden, Conn.

White Mfg. Co., Ninth St. & E. Lincoln Ave., Goshen, Ind.

Wicaco Screw & Machine Works, Stenton Ave., Philadelphia, Pa.

Wisconsin Machinery & Mfg. Co., Milwaukee, Wis. (See page 633.)

Wood & Spencer Co., 1930 E. 61st St., Cleveland, O. (See page 729.)

Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

York Screw Works, York, Pa.

Ypsi Screw Co., River St., Ypsilanti, Mich.

Zarem & Rose, 174 Centre St., New York, N. Y.

Zeigler Mfg. Co., 216 S. Central Ave., Alexandria, Ind.

Zumbach Machine Co., 134-36 W. 54th St., New York, N. Y.

SCREW MACHINES—See Machines, Screw

SCREW PITCH GAGES—See Gages, Screw Pitch

SCREW PLATES—See Taps and Dies

SCREWS, Cap and Set

Aetna Screw & Bolt Co., 213 N. Desplaines St., Chicago, Ill.

Allen Mfg. Co., 135 Sheldon St., Hartford, Conn.

Atlas Bolt & Screw Co., Cleveland, O.
(See page 745.)

Automatic Products Co., 1145 W. Grand Blvd., Detroit, Mich. (See page 739.)

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill.
(See pages 499 and 743.)

Cincinnati Screw Co., Twilight, O.
(See page 735.)

Clark Bros. Bolt Co., Milldale, Conn.

Cleveland Wrought Products Co., W. 58th St., South of Denison, Cleveland, O.

Columbus Bolt Works Co., Columbus, O.
(See page 147.)

Corbin Screw Corp., 227 High St., New Britain, Conn.

Everything is listed under the NOUN or principal word



BOLTS
NUTS
SCREWS
RIVETS
SET
SCREWS
CAP
SCREWS

U. S. STANDARD
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Strictly High Grade Product

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BOLT MAKERS *Cleveland, U.S.A. SINCE '90-*

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SUPERIOR QUALITY PISTON PINS

Ground on their own centers.

Selected Alloy Steel.

Standards and .003, .005 and .010 over-size always in stock.

Packed one set to a box.

Each pin is guaranteed to a limit of +.00025 Minus .000 to size required.

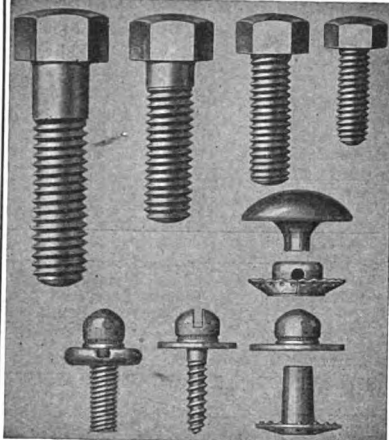
We will replace any pins, free of charge, not satisfactory in every respect.

Write for Price List and Discounts
A Trial Order Will Convince You

Quality Screw Machine Products

LEDERER BROS. CO.

100 Stewart St., Providence, R. I.



MACHINE AND CAP SCREWS

All standard sizes. Special sizes made to order in quantities.

SNAP FASTENERS

Our ACME Snap Fastener is particularly desirable for fastening automobile curtains, tops, windshields, seat covers, radiator covers, floor carpet, and door pockets. It is used and endorsed by the largest automobile manufacturers.

We make an almost unlimited variety of standard and special fasteners.

SPECIAL PARTS

Small stamped and formed parts made to order in quantities. Screw machine products.

RAW MATERIALS

Brass, Bronze, Nickel Silver, in sheets, plates, rods, wire, cups, and circles.

Our experience extends from the beginning of the automobile industry.

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SCREWS, Cap and Set (Continued)

Crittenden Mfg. Co., 3380 Washington St., Boston, Mass.
 Curtis Screw Works, 17 Gull St., Buffalo, N. Y.
 Detroit Screw Works, 1494 Franklin St., Detroit, Mich.
 Federal Screw Works, 4725 Ellery St., Detroit, Mich.
 Ferry Cap & Set Screw Co., Cleveland, O. (See page 743.)
 Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."
 Foster—See New Haven Screw Co.
 Gordon-Little Co., 122-30 N. Senate Ave., Indianapolis, Ind.
 Harper Screw Works, F. C., 29 S. Clinton St., Chicago, Ill.
 Hartford Machine Screw Co., Hartford, Conn. (See page 741.)
 Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
 Illinois Mfg. & Supply Co., 1455 S. Michigan Ave., Chicago, Ill.
 Mac-It Parts Co., Shippen & Liberty Sts., Lancaster, Pa.
 May Automatic Products Co., 2157 Howard St., Detroit, Mich.
 Metzger Welding Co., 1652 Powers St., Cincinnati, O.
 Muncie Cap & Set Screw Co., Willard St. & Hoyt Ave., Muncie, Ind.
 Namco—See National Acme Co.
 National Acme Co., Cleveland, O. "Namco." (See page 601.)
 National Lock Co., Rockford, Ill.
 National Machine Products Co., 4850 Bellevue Ave., Detroit, Mich.
 New Haven Screw Co., 191-93 Foster St., New Haven, Conn. "Foster."
 Ottemiller Co., Wm. H., Pattison St., & M. & P. R. R., York, Pa.
 Peninsular Products Co., Detroit, Mich. (See page 629.)
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Phoenix Mfg. Co., Grand River at Loraine, Detroit, Mich. (See page 725.)
 Pittsburgh Screw & Bolt Co., Preble Ave. (N. S.), Pittsburgh, Pa.
 Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
 Rhode Island Tool Co., Providence, R. I.
 Rochester Machine Screw Co., 15 Caledonia St., Rochester, N. Y.
 Russell & Erwin Mfg. Co., New Britain, Conn.
 St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
 Seovill Mfg. Co., Waterbury, Conn. (See page 745.)
 Sherman-Klove Co., 4040-48 W. Harrison St., Chicago, Ill. (See page 743.)
 Shimer & Sons, Samuel J., Milton, Pa.
 Spafford Machine Screw Works, 516 Asylum St., Hartford, Conn.
 Steel Products Co., Cleveland, O. (See page 915.)
 U. S. Automatic Co., Amherst, O.
 Union Cap Screw Co., 2262 Hendrie Ave., Detroit, Mich.
 Upson Nut Co., Unionville, Conn.
 Victor Screw Works, 240 John R St., Detroit, Mich.
 Western Automatic Machine Screw Co., Elyria, O.
 Western Screw-Products Co., St. Louis, Mo. (See page 749.)
 Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.
 York Screw Works, York, Pa.

SCREWS, Coach and Lag

Atlas Bolt & Screw Co., Cleveland, O. (See page 745.)
 Boss Nut Co., 1732-54 N. Kolmar Ave., Chicago, Ill.
 Clark Bros. Bolt Co., Milldale, Conn.
 Falls Rivet Co., Kent, O.
 Foster Bolt & Nut Mfg. Co., 3556 E. 72d St., Cleveland, O. "Perfection."
 Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 Oliver Iron & Steel Co., Tenth & Muriel Sts., Pittsburgh, Pa.
 Perfection—See Foster Bolt & Nut Mfg. Co.
 Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
 Upson Nut Co., Scranton Rd., Cleveland, O.

SCREWS, LAG—See Screws, Coach and Lag**SCREWS, Machine**

Aetna Screw & Bolt Co., 213 N. Desplaines St., Chicago, Ill.
 American Screw Co., 21 Stevens St., Providence, R. I.
 Atlas Bolt & Screw Co., Cleveland, O. (See page 745.)
 Blake & Johnson Co., Waterbury, Conn. (See page 737.)
 Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.
 Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 399.)
 Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill. (See pages 409 and 743.)
 Corbin Screw Corp., 227 High St., New Britain, Conn.
 General Mfg. Co., 66 N. Elm St., Waterbury, Conn.
 Gordon-Little Co., 122-30 N. Senate Ave., Indianapolis, Ind.
 Hartford Machine Screw Co., Hartford, Conn. (See page 741.)
 Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.
 Keystone Screw Co., Yardley, Pa.
 Levy, Benj., 355 W. Broadway, New York, N. Y.
 Liberty Screw Co., 383 Shrewsbury St., Worcester, Mass.
 May Automatic Products Co., 2157 Howard St., Detroit, Mich.
 National Lock Co., Rockford, Ill.
 National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.
 Pheoll Mfg. Co., 5750 W. Roosevelt Rd., Chicago, Ill.
 Progressive Mfg. Co., 52 Norwood St., Torrington, Conn.
 Ramadell Specialty Co., 766 W. Boylston St., Worcester, Mass.
 Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
 Russell & Erwin Mfg. Co., New Britain, Conn.
 St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.
 Seovill Mfg. Co., Waterbury, Conn. (See page 745.)
 Steele & Johnson Mfg. Co., 770 S. Main St., Waterbury, Conn.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Western Automatic Machine Screw Co., Elyria, O.
 Worcester Machine Screw Co., 26 Haviland St., Worcester, Mass.

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741 W. Van Buren Street CHICAGO, ILLINOIS

SCREWS, SET—See Screws, Cap and Set

SCREWS, Thumb

Atlas Bolt & Screw Co., Cleveland, O.
(See page 745.)

Chicago Screw Co., Homan Ave. & Fillmore St., Chicago, Ill.
(See pages 499 and 743.)

Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.

Peninsular Products Co., Detroit, Mich.
(See page 629.)

Rochester Machine Screw Co., 15 Caledonia St., Rochester, N. Y.

St. Louis Screw Co., Clarence & Bulwer Aves., St. Louis, Mo.

Screw Machine Products Corp., 1012 Eddy St., Providence, R. I.

Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.

Western Automatic Machine Screw Co., Elyria, O.

Worcester Screw Co., 26 Haviland St., Worcester, Mass.

SCREWS, Wood

Aetna Screw & Bolt Co., 213 N. Desplaines St., Chicago, Ill.

American Screw Co., 21 Stevens St., Providence, R. I.

Atlantic Screw Works, Charter Oak Ave., Hartford, Conn.

Bridgeport Screw Co., Williston St. & Union Ave., Bridgeport, Conn.

Champion Mfg. Co., 74th St. & Kimbark Ave., Chicago, Ill. (See page 399.)

Continental Wood Screw Co., Mt. Pleasant St., New Bedford, Mass.

Corbin Screw Corp., 227 High St., New Britain, Conn.

Eagle Lock Co., 105 Chambers St., New York, N. Y.

Gordon-Little Co., 122-30 N. Senate Ave., Indianapolis, Ind.

National Lock Co., Rockford, Ill.

National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.

Parker Co., Charles, 48 Elm St., Meriden, Conn.

Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.

Russell & Erwin Mfg. Co., New Britain, Conn.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.

Wire Goods Co., 28 Union St., Worcester, Mass.

SEALING COMPOUNDS—See Compounds, Puncture Sealing

SEALS, Motor Heat

Hammond, Laurens, 2170 E. Jefferson Ave., Detroit, Mich.

SEALS, Valve Stem

Eclipse Accessories Mfg. Co., 1138 E. 112th St., Cleveland, O.

SEARCHLIGHTS, ACETYLENE — See Lamps, Acetylene; also Headlights, Tractor Acetylene

SEARCHLIGHTS, ELECTRIC — See Headlights, Electric; also Lights, Spot

SEARCHLIGHTS, SWIVEL ELECTRIC— See Lights, Spot

SEAT BACKS—See Backs, Metal Seat; also Bendings, Wood

SEAT BENDINGS—See Bendings, Wood

SEAT COVERS—See Covers, Slip

SEAT CUSHIONS—See Cushions, Seat

SEAT PADS—See Seats, Auxiliary

SEAT PROTECTORS—See Covers, Fender

SEATING MACHINES— See Machines, Valve Seating and Facing

SEATS, Auxiliary

(Cane, Wicker or Straw Seats to be used over regular cushions)

American—See Ottawa Cushion Co.

Brockman Co., 1325 Belden Ave., Chicago, Ill. "Vento."

Ever-Kleen—See Wedler-Shuford Co.

Kool Komfort Cushion Mfg. Co., Jacksonville, Fla.

Ottawa Cushion Co., Ottawa, Ill. "American."

Vento—See Brockman Co.

Wedler-Shuford, 320 N. 19th St., St. Louis, Mo. "Ever-Kleen."

SEATS, Supplementary

(Auxiliary or Supplementary Seats including folding chairs and stools)

American Auto Top Companies, 2 Hudson St., New York, N. Y. "Victor."

Amesbury Brass & Foundry Co., Amesbury, Mass.

Bailey-Drake Co., 1130 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Defiance Welding Co., Defiance, O. "Boko.")

Boko—See Bailey-Drake Co.

Buffington & Co., C. A., Berkshire, N. Y.

Defiance Welding Co.—See Bailey-Drake Co.

Empire Gear & Top Co., 307 N. 23d St., Philadelphia, Pa.

Handy-Fandy—See Pandolfo Mfg. Co.

Hill Mfg. Co., 25-27 Fuller St., Buffalo, N. Y.

Hodge & Graves Co., Amesbury, Mass. "Luxury."

Ideal—See Wilder Mfg. Co.

Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.

Imperial Bit & Snap Co., Racine, Wis.
(See page 225.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Distributors East of the Mississippi River for Standley Adjusters.) (See page 138B.)

Luxury—See Hodge & Graves Co.

McKinnon Dash Co., Buffalo, N. Y.
(See page 686.)

Neff Co., Wade Bldg., Cleveland, O.

Pandolfo Mfg. Co., St. Cloud, Minn. "Handy-Fandy."

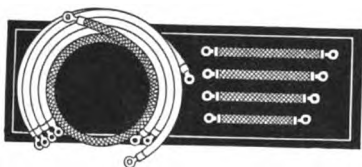
Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.

Standley Skid Chain Co., Boone, Ia.
(See page 138B.)

Victor—See American Auto Top Companies.

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FORD WIRING SET



Complete line of Ford Ignition Assemblies and Spark Plug Wires, Fordson Tractor Assemblies and Spark Plug Wires.

Highest quality of Material and Workmanship.

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Standard and over-size for all makes of motors.

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THE making of storage battery separators has become a science just like everything else.

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So, for your own protection be sure and specify "HEATH" the next time you order.

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Perfectly
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or
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ST. LOUIS

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SEATS, Supplementary (Continued)

Victor Steel Stamping Co., 2102 Downing St., Denver, Colo.
 Wilder Mfg. Co., 211-15 Pacific St., Brooklyn, N. Y. "Ideal."

SEATS, Supplementary, for Fords

(For attaching to inside of tonneau doors)

McKinnon Dash Co., Buffalo, N. Y.
 (See page 686.)

SEATS, Tractor

Adjustable Spring Seat Co., Society for Savings Bldg., Cleveland, Ohio.
 McCoy Seat Co., 221 E. 131st St., Cleveland, O.
 Seibel Air Spring Co., Humboldt Bank Bldg., San Francisco, Cal.
 Sykes Metal Lath & Roofing Co., Niles, O.

SECONDARY WIRE—See Wire, Insulated**SEAR LIGHTERS—See Lighters, Electric Cigar****SELF-FLUXING SOLDER — See Flux, Soldering; also Solder, Bar and Wire****SELF-HARDENING CUTTING STEEL—See Steel, Self-Hardening Cutting****SEMAPHORES—See Signals, Direction Indicating or Traffic****SENSITIVE DRILLS—See Drilling Machines, Sensitive****SEPARATING TOOLS—See Tools, Spring Leaf Separating****SEPARATORS, BATTERY — See Separators, Storage Battery****SEPARATORS, Bow**

(See also Holders, Top)

Amesbury Brass & Foundry Co., Amesbury, Mass.
 Anchor—See North & Judd Mfg. Co.
 Desoco—See Detroit Socket Co.
 Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 471.)

SEPARATORS, GASOLINE—See Strainers, Gasoline**SEPARATORS, Oil**

Oil & Waste Saving Machine Co., Real Estate Trust Bldg., Philadelphia, Pa.

SEPARATORS, PULLEY—See Tools, Storage Battery Repair**SEPARATORS, REMOVERS—See Tools, Storage Battery Repair****SEPARATORS, Storage Battery**

(Wood and Composition Separators; for Rubber Separators—See Rubber, Hard)

Arthur Storage Battery Supply Co., 2540-42 Cottage Grove Ave., Chicago, Ill.
 (See page 94.)

Battery Separator Co., 354 E. 33rd St., Chicago, Ill.

Benson Electric Co., 704-06 Southwest Blvd., Kansas City, Mo.

Clark Mfg. Co., Adrian, Mich.

Darling Co., Len H., Addison, Mich.

Ferry Mfg. Co., 2119 S. Fourth St., St. Louis, Mo.

Heath Mfg. Co., Greenville, Mich.
 (See page 749.)

Pruitt-Deming Mfg. Co., Edinburg, Ind.

Smith Co., Harrison, Oklahoma City, Okla.

Stewart Estate, William E., 14th & Elm Sts., Flint, Mich.

SERVICE STATIONS—See Stations, Electric Service**SET SCREWS—See Screws, Cap****SETS, Rivet**

Braunsdorf-Mueller Co., Elizabeth, N. J.

Carver Tool Works, Spring Valley, N. Y.

Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill.

Kraemer & Co., Newark, N. J.
 (See page 643.)

Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."

Pexto—See Peck, Stow & Wilcox Co.

Red Devil—See Smith & Hemenway.

Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1058.)

Smith & Hemenway, 130 Colt St., Irvington, N. J. "Red Devil."

SETS, Wiring, for Fords

(Complete Ignition wiring out to lengths and fitted with necessary terminals)

Alcemo Mfg. Co., 20 Bridge St., Newark, N. J.
 Automotive Accessory Co., Unity & Wingo-hocking Sts., Philadelphia, Pa.

Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.

Belden Mfg. Co., 2300 S. Western Ave., Chicago, Ill. (See page 187.)

Chief Products Co., 2335 Michigan Ave., Chicago, Ill.

Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawco." (See page 429.)

Fawco—See Faw Co.

Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. (See page 537.)

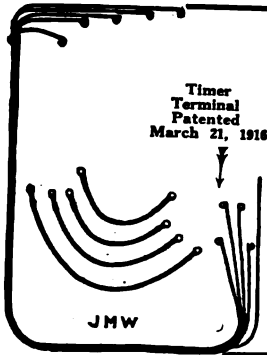
Goodrich-Lenhart Mfg. Co., Hamburg, Pa. (See page 933.)

Grossman Auto Parts Co., White Plains, N. Y.
 Harris Co., 89 State St., Boston, Mass. (Sole Distributor for Norman Co., Franklin, Mass.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Porcelain Enameling & Mfg. Co., Detroit, Mich.) (See page 134.)

Koontz Mfg. Co., 1309 S. Oakley Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word



**Braided Ignition and Lighting Wire Assemblies.
Primary and Secondary Cables.
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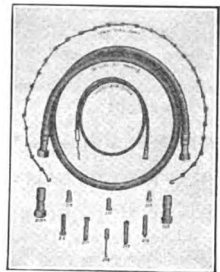
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SETS, Wiring, for Fords (Continued)

McCarthy Bros. & Wilson, 2241 N. Broad St., Philadelphia, Pa. (Dealers.)
(See page 715.)

Midway Mechanical Co., St. Paul, Minn.

Norman Co.—See Harris Co.

Perfection—See Harris Co.

Porcelain Enameling & Mfg. Co.—See Jonas, C. N. & F. W.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."
(See page 489.)

Western Ignition Co., 2907 Locust St., St. Louis, Mo. (See page 749.)

White, J. M., 1116-22 Olive St., Philadelphia, Pa. (See page 751.)

Whitney Blake Co., New Haven, Conn.
(See page 957.)

SHACKLE BOLTS — See Bolts, Spring Shackle

SHACKLE LUBRICATORS—See Lubricators, Spring and Shackle Bolt

SHADES, HEADLIGHT—See Dimmers, Headlight

SHADES, SUN—See Visors, Wind Shield

SHAFT COUPLINGS—See Couplings

SHAFT HOUSING BRACES FOR FORDS
—See Braces, Drive Shaft Housing

SHAFT STEADY BEARINGS—See Bearings, Drive Shaft Steady

SHAFTING, Flexible

(For driving Speedometers, Odometers or Tachometers)

Breeze Metal Hose & Mfg. Co., 250-52 South St., Newark, N. J.

Coates Clipper Mfg. Co., 237 Chandler St., Worcester, Mass.

Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.

Ogden Mfg. Co., Plymouth, Ind.

Saco—See Speedometer Accessories.

Speedometer Accessories, Plymouth, Ind. "Saco."

Stow Flexible Shaft Co., 3452 Ludlow St., Philadelphia, Pa.

Stow Mfg. Co., 443 State St., Binghamton, N. Y.

Swivel Joint & Shaft Co., Plymouth, Ind.
(See page 751.)

Webb Mfg. Co., 245-47 N. J. R. R. Ave., Newark, N. J. (See page 753.)

White Dental Mfg. Co., S. S., 84 Market St., New York, N. Y. (See page 751.)

SHAFTS, CAM—See Camshafts, Finished

SHAFTS, CLUTCH—See Shafts, Transmission

SHAFTS, CRANK—See Crankshafts, Finished

SHAFTS, FLEXIBLE—See Shafting, Flexible

SHAFTS, Propeller

(Complete Propeller Shaft assemblies to blue print or specification; for Universal joints only—See Joints, Universal)

Arvac Mfg. Co., Anderson, Ind.
(See page 499.)

Bender Mfg. Co., 539 W. Front St., Plainfield, N. J.

Blood-Brothers Machine Co., Allegan, Mich. (See page 499.)

Columbian Bronze Corp., 522 Fifth Ave., New York, N. Y. "Tobin"

Foreman, W. D., 16th & Prairie Ave., Chicago, Ill. (See page 753.)

Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn. "K-B."

K-B—See Hartford Automotive Parts Co.

Pick Co., Carl, West Bend, Wis.

(See page 499.)

R-S Mfg. Co., Dayton, O. "Reim."

Ream—See R-S Mfg. Co.

Salisbury Axle Co., Jamestown, N. Y.
(See page 968.)

Snead & Co., Jersey City, N. J.
(See page 827.)

Spicer Mfg. Corp., South Plainfield, N. J.
(See page 497.)

Tobin—See Columbian Bronze Corp.

Universal Machine Co., Bowling Green, O.

SHAFTS, PROPELLER TRACTOR — See Shafts, Tractor Propeller

SHAFTS, PUMP—See Shafts, Transmission

SHAFTS, Rear Axle

Atlas Axle Mfg. Co., River & Summer Sts., Dallas, Tex.

Auto Engineering Co., 1535 Temple Ave., Detroit, Mich. (See page 85.)

Automotive Gear Works, Atlanta, Ga.
(See page 421.)

Bauer Machine Co.—See Eckhouse & Co.

Butler-Edwards Electric Co., Easton, Pa.
(See page 753.)

Claypool—See Jonas, C. N. & F. W.

Detroit Motor Parts Co., 133-35 W. Larned St., Detroit, Mich.

Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bauer Machine Co. Jeffersonville, Ind.)

Farran-Kinney Co., 7 S. Dearborn St., Chicago, Ill. (See page 113.)

Foreman, W. D., 16th & Prairie Ave., Chicago, Ill. (See page 753.)

Gibbes Machinery Co., Wheat & Assembly Sts., Columbia, S. C.

Greer, Frederic, 2437 Michigan Ave., Chicago, Ill.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Newton Products, Claypool, Ind. "Claypool.") (See page 137.)

Lempco—See Lake Erie Metal Products Co.

Lake Erie Metal Products Co., 1838 Central Ave., Cleveland, O. "Lempco."

Lyon Co., Edward F., 1600-34 E. Euclid Ave., Detroit, Mich.

Marx Machine Tool Co., 2222 Myrtle St., Detroit, Mich.

Monmouth Machine Co., 2343 Lakeside Ave., Cleveland, O.

Newton Products—See Jonas, C. N. & F. W.

Reppo—See Replacement Parts Co.

Replacement Parts Co., 1012 Baltimore Ave., Kansas City, Mo.

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Please mention The Automobile Trade Directory

SHAFTS, Rear Axle (Continued)

Schnerr Co., J. J., 799 Golden Gate Ave., San Francisco, Cal. (See page 429.)
 Sellik Bros., 2532 24th St., Detroit, Mich. (See page 627.)
 Service Gear & Machine Co., Second & But-tonwood Sts., Reading, Pa.
 Spencer Metal Products Co., Spencer, O.
 Turner Machine & Mfg. Co., 31st & Genesee Sts., Kansas City, Mo.
 U. S. Manufacturers Sales Corp., 2210-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 689.)
 Universal Auto Parts Co., 268 Nartilla St., Portland, Ore. (Distributors.) (See page 157.)
 Wayne Tool Co., 642 Catherine St., Detroit, Mich.

SHAFTS, Rear Axle, for Fords

Allied Steel Products Co., 7 Walnut St., Aurora, Ill.
 Angiers, 500 N. Vermillion St., Streator, Ill.
 Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
 Aach and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and Southern Distributors for Spencer Shafts.) (See page 247.)
 Atlas Axle Mfg. Co., River & Summer Sts., Dallas, Tex.
 Bauer Machine Co.—See Eckhouse & Co.
 Bridgers Co., J. D., Florence, S. C. (See page 727.)
 Butler-Edwards Electric Co., Easton, Pa. (See page 753.)
 Cincinnati Screw Co., Twilight, O. (See page 735.)
 Dunham Co., Thos., Aurora, Ill. (See page 145.)
 Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bluer Machine Co., Jeffersonville, O.)
 Farran-Kinney Co., 7 S. Dearborn St., Chicago, Ill. (See page 113.)
 Foreman, W. D., 16th & Prairie Ave., Chicago, Ill. (See page 753.)
 Fulton-Houston Co., 1146 S. Michigan Blvd., Chicago, Ill. (Dealers.) (See page 415.)
 Gibbs Machinery Co., Wheat & Assembly Sts., Columbia, S. C.
 Grossman Auto Parts Co., White Plains, N. Y.
 Lake Erie Metal Products Co., 1838 Central Ave., Cleveland, O. "Lempco."
 Lempeco—See Lake Erie Metal Products Co.
 Marx Machine Tool Co., 2222 Myrtle St., Detroit, Mich.
 Niagara Motors Corp., Dunkirk, N. Y.
 Repco—See Replacement Parts Co.
 Replacement Parts Co., 1012 Baltimore Ave., Kansas City, Mo. "Repco."
 Salisbury Axle Co., Jamestown, N. Y. (See page 908.)
 Schnerr Co., J. J., 799 Golden Gate Ave., San Francisco, Cal. (See page 429.)
 Sellik Bros., 2532 24th St., Detroit, Mich. (See page 627.)
 Service Gear & Machine Co., Second & But-tonwood Sts., Reading, Pa.
 Simmons Mfg. Co., 3405-11 Perkins Ave., Cleveland, O.
 Spencer Metal Products Co., Spencer, O.
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.
 Universal Auto Parts Co., 268 Nartilla St., Portland, Ore. (Distributors.) (See page 157.)

SHAFTS, Tractor Propeller

Hartford Automotive Parts Co., 142 Lawrence St., Hartford, Conn. "K-B."
 K-B—See Hartford Automotive Parts Co.

SHAFTS, Transmission, Clutch and Pump

Marx Machine Tool Co., 2222 Myrtle Ave., Detroit, Mich.
 Turner Machine & Mfg. Co., 31st & Genesee Sts., Kansas City, Mo.

SHAPERS, Metal

American Tool Works Co., Pearl & Eggleston Aves., Cincinnati, O.
 Bertschy Engineering Co., 802 N. 16th St., Omaha, Neb.
 Boynton & Plummer, Chester Depot, Vt.
 Cincinnati Shaper Co., Elam St. & Garrard Ave., Cincinnati, O.
 Cochrane-Bly Co., 15 St. James Pl., Rochester, N. Y.
 Davis Machine Tool Co., 307 St. Paul St., Rochester, N. Y.
 Gould & Eberhardt, Coit & Chancellor Aves., Irvington, N. J.
 Hendey Machine Co., 105 Summer St., Torrington, Conn.
 Juengst & Sons, Geo., Croton Falls, N. Y.
 Kelly Co., R. A., W. Main St., Xenia, O.
 Milwaukee Shaper Co., 1029 Coldspring Ave., Milwaukee, Wis.
 Niles-Bement-Pond Co., 111 Broadway, New York, N. Y.
 O & S—See Osborne & Sexton Machinery Co.
 Ohio Machine Tool Co., Kenton, O.
 Osborne & Sexton Machinery Co., Fourth & Russell Sts., Columbus, O. "O & S."
 Potter & Johnston Machine Co., 1035 Newport Ave., Pawtucket, R. I.
 Queen City Machine Tool Co., 1405 Sycamore St., Cincinnati, O.
 R. M. Co.—See Rhodes Mfg. Co.
 Rhodes Mfg. Co., 948 Park St., Hartford, Conn. "R. M. Co."
 Rockford Machine Tool Co., 2400 Kiskwaukee St., Rockford, Ill.
 Smith & Mills Co., 2889-91 Spring Grove Ave., Cincinnati, O.
 Springfield Machine Tool Co., Southern Ave. & P. C. & St. L. R. R., Springfield, O.
 Stapt & Co., John B., Dunkirk, N. Y.
 Stamco—See Streine Tool & Mfg. Co.
 Steptoe Co., John, 2961 Colerain Ave., Cincinnati, O.
 Stockbridge Machine Co., 68 Abbott St., Worcester, Mass.
 Streine Tool & Mfg. Co., New Bremen, O. "Stamco."
 Whipp Machine Tool Co., Sidney, O.

SHAPERS, Wood

Advance Machinery Co., Van Wert, O.
 American Wood Working Machinery Co., 591 Lyell Ave., Rochester, N. Y.
 Barker & Co., Wm., Pleasant & Wheeler Sts., Covington, Ky.
 Bentel & Margedant Co., Hamilton, O.
 Cordesman, Meyer & Co., 53-57 Central Ave., Cincinnati, O.
 Cordesman-Rechtin Co., 215 Butler St., Cincinnati, O.
 Crescent Machine Co., Leontia, O.
 De fiance Machine Works, 484 Perry St., De fiance, O.
 Fay & Egan Co., J. A., Front & John Sts., Cincinnati, O.
 Hall & Brown Woodworking Machine Co., Broadway & Ninth Sts., St. Louis, Mo.

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SHAPERS, Wood (Continued)

Jones Superior Machine Co., 1253-73 W. North Ave., Chicago, Ill.
 Oliver Machinery Co., 1025 Clancy St., N. E., Grand Rapids, Mich.
 Porter Machinery Co., C. O., 666 Front Ave., Grand Rapids, Mich.
 Power & Co., L., 20 S. 23d St., Philadelphia, Pa.
 Prybil Machine Co., P., 512-24 W. 41st St., New York, N. Y.
 Smith Machine Co., H. B., Smithville, N. J.
 Whitney & Son, Baxter D., Winchendon, Mass.

SHEARS, BRAKE LINING—See Cutters, Brake Lining

SHEARS, Rotary

Grays—See Southwark Foundry & Machine Co.
 Quickwork Co., Celina Rd., St. Marys, O.
 Southwark Foundry & Machine Co., 430 Washington Ave., Philadelphia, Pa. "Grays."
 Yoder Co., Walworth Ave. & 56th St., Cleveland, O.

SHEAVES AND PULLEYS

(For Horn and Out-out Cables)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 471.)

SHEET ALUMINUM—See Aluminum

SHEET ASBESTOS—See Asbestos

SHEET BRASS—See Brass, Sheet

SHEET CELLULOID—See Celluloid, Sheet

SHEET COPPER—See Brass and Copper, Sheet

SHEET CORK—See Cork, Sheet

SHEET FELT—See Felt, Sheet

SHEET FIBRE—See Fibre, Hard

SHEET METAL TESTING INSTRUMENTS
 —See Instruments, Metal Testing

SHEET PACKING—See Packing

SHEET RUBBER—See Rubber, Hard

SHEET STEEL—See Steel

SHELLAC—See Cement, Gasket

SHELLS, BOILER—See Shells, Copper

SHELLS, Copper Boiler

Randolph-Clowes Co., 384 Bark St., Waterbury, Conn.

SHELLS, Muffler for Fords

Expando—See Hudson Motor Specialties Co.
 Hudson Motor Specialties Co., 1934 Arch St., Philadelphia, Pa. "Expando."

SHELVING, METAL—See Racks, Metal Tool

SHERARDIZING—See Galvanizing

SHIELD STRIPS—See Strips, Wind Shield Weather

SHIELDS, Auxiliary Wind

Accessory Supply Co., Reliance Bldg., Kansas City, Mo. "Asco."

Alexander Mirroscope Co., 1991 Broadway, New York, N. Y. "Deflectoscope."
 (See page 587.)

Adjusto—See Perfection Co.

Apex—See Taylor & Co.

Asco—See Accessory Supply Co.

Auto Glass & Mirror Corp., 320 Jefferson Ave., Buffalo, N. Y. (See page 587.)

Automotive Accessories, Inc., Kokomo, Ind. "Shureloc." (See page 573.)

Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Wind-A-Way."

Beedee Distributing Service, 613 W. Pico St., Los Angeles, Cal. (Sole Distributors for De Luxe Auto Mfg. Co., Los Angeles, Cal.)

Benzer Corp., Myrtle, Cooper & Webster Aves., Brooklyn, N. Y. (See page 335.)

Boyce-Jones Co., 1432 Main St., Buffalo, N. Y. (See page 757.)

Bridgeport Mirror Mfg. Co., 520 Water St., Bridgeport, Conn. "Fein."
 (See page 777.)

Clear Vision—See Johnston Mfg. Co.

Deflectoscope—See Alexander Mirroscope Co.

Denver Wing Co., 2131 S. Michigan Ave., Chicago, Ill. "Duplex."

De Luxe Auto Mfg. Co.—See Beedee Distributing Service.

Detroit Auto Visor Co., 1326 Woodbridge St., E., Detroit, Mich.

Duplex—See Denver Wing Co.

Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.

Enemesco—See Northwestern Mirror & Specialty Co.

Fairview—See Manufacturers Engineering Co.

Fein—See Bridgeport Mirror Mfg. Co.

Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich. "Weston."

H. I.—See Hartman & Inman.

H. & H.—See Simplex Windshield Wing Co. of Chicago.

Hartford Windshield Co., 1006 S. Los Angeles St., Los Angeles, Cal.

Hartman & Inman, 157 W. 51st St., New York, N. Y. "H. I."

Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.

Ideal—See Thomas Mfg. Co.

Johnston Mfg. Co., William R., 451-69 E. Ohio St., Chicago, Ill. "Clear Vision."
 (See page 437.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Rain-Sun Vision Shield Co., Los Angeles, Cal.)

Jubilee Mfg. Co., 1929 S. 20th St., Omaha, Neb.

Kozy-Wings—See Thomas-Bray Co.

Krinsky, Emil J., 1440 S. Michigan Ave., Chicago, Ill.

Manufacturers Engineering Co., 524 Wyoming St., Dayton, O. "Fairview."

Masco—See Mayer Auto Accessories Corp.

Mayer Auto Accessories Corp., 333 Washington St., Buffalo, N. Y. "Masco."

Everything is listed under the NOUN or principal word

SHIELDS, Auxiliary Wind (Continued)

Metal Goods Mfg. Co., 566 Commercial St., Boston, Mass.
 Mitchell Automotive Co., 157 Christopher St., New York, N. Y. (See page 777.)
 Moswell Mfg. Co., 175 Grand St., New York, N. Y.
 Northwestern Mirror & Specialty Co., 1225-29 S. Crawford Ave., Chicago, Ill. "Enmesco."
 Pacific Windshield Co., 814 S. Olive St., Los Angeles, Cal.
 Peerless—See Rapid Sales Corp.
 Perfection Co., 400 W. Ohio St., Chicago, Ill. "Adjusto."
 Perfection Windshield Co., Indianapolis, Ind. (See page 757.)
 Pitts Auto Equipment Co., 84 E. Tenth St., New York, N. Y.
 Rain-Sun Vision Shield Co.—See Jonas, C. N. & F. W.
 Rapid Sales Corp., Smith Jr. Bldg., Grand Rapids, Mich. "Peerless." (See page 811.)
 Ross & Co., A. M., Temple Theatre Bldg., Ilion, N. Y. "Utility."
 Royal Wings Co., 3219 S. Michigan Ave., Chicago, Ill.
 Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.
 Sewell-Garding Mfg. Co., 1120 Broadway, Denver, Colo.
 Shurelock—See Automotive Accessories, Inc.
 Simplex Windshield Wing Co. of Chicago, 2206 S. Michigan Blvd., Chicago, Ill. "H. & H."
 Standard Corp., Outlook Bldg., Columbus, O.
 Star Wing Co., 170 W. Randolph St., Chicago, Ill.
 Taylor & Co., 206 Wells St., Milwaukee, Wis. "Apex."
 Thoma & Son, Fairfield, Ia.
 Thomas-Andrews Corp., Waukegan, Ill.
 Thomas-Bray Co., Provident Bank Bldg., Cincinnati, O. "Kozy-Wings."
 Thomas Mfg. Co., 1410-12 Dearborn St., Seattle, Wash. "Ideal."
 Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal.
 Tribune Engineering Co., Front St., Owego, N. Y.
 Utility—See Ross & Co.
 W. B.—See Willenberg Bros.
 Weldely Accessories Co., 528 Massachusetts Ave., Indianapolis, Ind.
 Western Windshield Works, 1513 Hennepin Ave., Minneapolis, Minn. "Wind-Y-Flect."
 Weston—See Gartley-Weston Mfg. Co.
 Willenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."
 Wind-A-Way—See Automotive Supply Mfg. Co.
 Wind-Y-Flect—See Western Windshield Works.

SHIELDS, FOOT PEDAL, FOR FORDS—
See Deflectors, Heat, for Fords**SHIELDS, RAIN—**See Visors, Top; also Visors, Wind Shield**SHIELDS, SPARK PLUG POINT—**See Protectors, Spark Plug Point**SHIELDS, SUN—**See Visors, Wind Shield**SHIELDS, Tonneau**

(Special adjustable shields for the protection of rear seat passengers in open cars)

Auster—See Fleetwood Metal Body Co.
 Auster—See Tonneau Shield Co.
 Beatonsen—See Sharrer Patent Top Co.
 Bentel—See Thompson Co.
 Clark & Son, A. N., Broad St., Plainville, Conn.
 Fleetwood Metal Body Co., Fleetwood, Pa. "Auster."
 Gemco Mfg. Co., 686 S. Pierce St., Milwaukee, Wis. "Tonn-O." (See page 167.)
 H. & H.—See Simplex Windshield Wing Co. of Chicago.
 Hartford Windshield Co., 1006 S. Los Angeles St., Los Angeles, Cal.
 Higgins Brass Works, J. C., Eighth & Main Sts., San Diego, Cal.
 J. H.—See Tonneau Shield Co.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Rain-Sun Vision Shield Co., Los Angeles, Cal.)
 Perfection-Hartford—See Perfection Windshield Co.
 Perfection Windshield Co., Indianapolis, Ind. "Perfection-Hartford." (See page 757.)
 Perkins Tonneau Windshield Co., 1931 Broadway, New York, N. Y.
 Rain-Sun Vision Shield Co.—See Jonas, C. N. & F. W.
 Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (Importers.) "Beatonsen." (See page 893.)
 Simplex Windshield Wing Co. of Chicago, 2206 S. Michigan Blvd., Chicago, Ill. "H. & H."
 Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.
 Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal. "Bentel."
 Tonneau Shield Co., 47-49 W. 63rd St., New York, N. Y. "J-H," "Auster." (See page 757.)
 Tonn-O—See Gemco Mfg. Co.

SHIELDS, TOP—See Visors, Top

SHIELDS, TRUCK RADIATOR—See Fenders and Guards, Truck Radiator

SHIELDS, Wind

Ackerman—See Smith & Co.
 Ainsworth Mfg. Co., 256 Dubois St., Detroit, Mich.
 Auto Wind Shield Co., University Rd., Cambridge, Mass.
 Banker Wind Shield Co., Ellsworth Ave. & Summerlea St., Pittsburgh, Pa.
 Brooklyn Windshield Co., 645 Bushwick Ave., Brooklyn, N. Y.
 Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)
 Detroit Auto Visor Co., 302-06 Woodbridge St., E. Detroit, Mich.
 Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 Empire Gear & Top Co., 207 N. 23d St., Philadelphia, Pa.
 English & Mersiek Co., New Haven, Conn. (See page 539.)
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Gemco Mfg. Co., 686 S. Pierce St., Milwaukee, Wis. (See page 167.)
 Johnston Commercial Body Co., Fort Smith, Ark.
 Jonah & George, Little's Ct., Merrimac, Mass.

Everything is listed under the NOUN or principal word

BOYCE-JONES CUSTOM-BUILT WINGS



A special design wing for each make of motor car.

Made especially for the motorist desiring his car to be groomed correctly in every detail.

Attractive Jobbing Discounts

Manufactured by

THE BOYCE-JONES CO.
1432 Main St. Buffalo

The "J. H." Tonneau or Rear Seat Shield

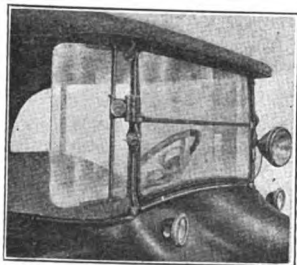


The only shield used as equipment
Thousands in use

Patented, February 27, 1912, and June 1, 1920. Other patents pending. Our patent upheld by the U. S. Court of Appeals. Beware of infringing imitations.

We have distributors in most large cities who carry stock and can take care of your wants immediately. Our prices are moderate.

Tonneau Shield Co., Inc.
Manufacturers
Vesta Bldg. 47-49 W. 63rd St. at Broadway
NEW YORK CITY



Perfection Side Windshields

Perfection Side Windshields Perfection-Hartford Tonneau Windshields

Enclosed car comfort for open models

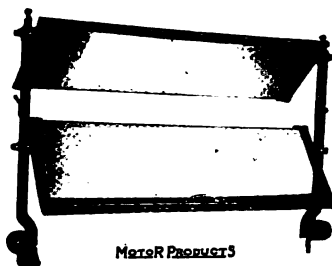
Add to the pleasure of motoring and improve the appearance of the most beautiful automobiles. They keep out rain, snow and dust. They break the annoying back draught.

Patented October 7, 1919; May 25, 1920, and July 28, 1920

Write for full information

PERFECTION WINDSHIELD CO.

Manufacturers and Distributors
Indianapolis, U. S. A.



MOTOR PRODUCTS

Model Z17 Windshield
Fits 1915-1916-1917-1918-1919 FORDS

Rain Vision and Ventilating Windshields for FORD Passenger Cars and Trucks

Model 100. Commercial Windshield with Slip for Ford Trucks.

Model 110. Heavy-Duty Truck Windshield.

Model 150. Reframe Windshield (without glass), fits 1915 to 1920 Ford Cars.

Model 160. Reframe Windshield (without glass), fits 1920 and 1921 Ford Cars.

Model 170. Windshield, fits 1920 and 1921 Ford Cars.

Ask Your Jobber—or Write Us Direct

MOTOR PRODUCTS CORPORATION
10801 Mack Avenue Detroit, Michigan

Please mention The Automobile Trade Directory

SHIELDS, Wind (Continued)

Monarch Auto Accessory Mfg. Co., 73 Main St., Buffalo, N. Y.
 Moore Co., W. J., Montague Ave. & Joy St., Caro, Mich.
 Motor Products Corporation, 11801 Mack Ave., Detroit, Mich. (See page 757.)
 Murray & Co., P. A., Newton, Mass.
 Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
 Progressive Windshield Co., 1618-22 Wabash Ave., Chicago, Ill.
 Rostand Mfg. Co., Milford, Conn.
 Smith & Co., Jos. N., 2481-91 E. Grand Blvd., Detroit, Mich. "Ackerman."
 Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.
 Ternstedt Mfg. Co., Detroit, Mich. (See Back Cover.)
 Troy Sun Shade Co., 710 Lincoln Ave., Troy, O.
 Western Windshield Works, 1513 Hennepin Ave., Minneapolis, Minn.
 Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 595.)

SHIELDS, Wind, for Fords

All-Steel—See Springfield Commercial Body Co.
 Dunham Co., Thos., Aurora, Ill. (See page 145.)
 Ford-Clark Co., 3125 Perkins Ave., Cleveland, O.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See page 167.)
 Motor Products Corporation, 11801 Mack Ave., Detroit, Mich. (See page 757.)
 Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
 Progressive Windshield Co., 1618-22 Wabash Ave., Chicago, Ill.
 Springfield Commercial Body Co., 385 Liberty St., Springfield, Mass. "All-Steel."
 Western Windshield Works, 1513 Hennepin Ave., Minneapolis, Minn.

SHIFTERS, Automatic Gear

C-H—See Cutler Hammer Mfg. Co.
 Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis. "C-H."
 Laursen—See United States Auto Gear Shift Co.
 Nuway Mfg. Co., Otis Bldg., Chicago, Ill.
 Pre-Selex Gear Shift Corp., Railway Exchange Bldg., Chicago, Ill.
 United States Auto Gear Shift Co., Truax Bldg., Eau Claire, Wis. "Laursen."

SHIMS AND LINERS, Brass and Copper

Brewer Tichener Corp., Cortland, N. Y.
 Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for McCord Shims.) (See page 113.)
 Fit-All—See Laminated Shlm Co.
 Fitzgerald Mfg. Co., Torrington, Conn. (See page 411.)
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa.
 Kales Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich.
 Kickhafer Mfg. Co., Dept. A., 359-71 Reed St., Milwaukee, Wis. (See page 807.)

Laminated Shlm Co., 14th St. & Governor Pl., Long Island City, N. Y. "Laminum," "Fit-All." (See pages 760 and 761.)
 Laminum—See Laminated Shlm Co.
 McCord Mfg. Co., Detroit, Mich. (See page 409.)
 Peelsteel Shlm Co., Paterson, N. J.
 Upco—See Utility Products Co.
 Utility Products Co., 75 Coniston Ave., Waterbury, Conn. "Upco."
 Victor Mfg. & Gasket Co., 5750 Roosevelt Rd., Chicago, Ill.
 Worcester Stamped Metal Co., Worcester, Mass. (See page 811.)

SHIMS, DEMOUNTABLE RIM—See Plates, Demountable Rim Wedge**SHIMS, Rear Axle Taper for Fords**

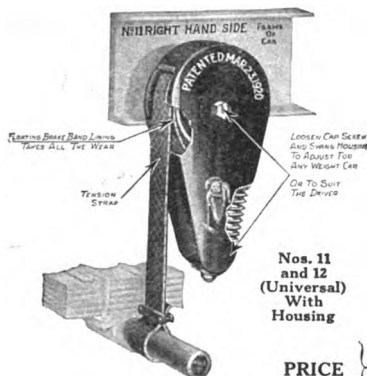
C. & M.—See Cantrell-Miller Machine Works.
 Cantrell-Miller Machine Works, 1246-54 Larkin St., San Francisco, Cal. "C. & M."

SHIPPING BAGS—See Bags, Shipping**SHIPPING BLOCKS—See Chocks, Blocks and Clamps, Car Shipping****SHIPPING CHOCKS—See Chocks, Blocks and Clamps, Car Shipping****SHIPPING CLAMPS—See Chocks, Blocks and Clamps, Car Shipping****SHIPPING COVERS—See Covers, Paper and Canvas Shipping****SHOCK ABSORBERS, Friction, Hydraulic and Pneumatic**

Auto Spring Control Co., 11-13 Harrison St., Jamestown, N. Y.
 Balcrank—See Cincinnati Ball Crank Co.
 Blackledge Mfg. Co., 341 E. Ohio St., Chicago, Ill. "Velvet."
 Bull Dog—See Channon-Hughson Co.
 Channon-Hughson Co., 227-33 W. Erie St., Chicago, Ill. "Bull Dog." (See page 759.)
 Cincinnati Ball Crank Co., Cincinnati, O. "Balcrank." (See page 498.)
 Courtesy Service & Sales Co., 1302 S. Wabash Ave., Chicago, Ill. (Northern, Illinois, Northern Indiana and Western Michigan Distributors for Houdaille Shock Absorbers.) (See page 197.)
 Flentje, Ernst, 1643 Cambridge St., Cambridge, Mass.
 Gabriel Mfg. Co., 1431 E. 40th St., Cleveland, Ohio.
 Gilman-Davis Co., 224 S. Michigan Ave., Chicago, Ill. (See page 765.)
 H L—See Hinsman Machine & Tool Co.
 Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 765.)
 Hinsman Machine & Tool Co., Westfield, Mass. "H L."
 Houdaille Co., 70 W. Chippewa St., Buffalo, N. Y.
 Kane Pneumatic Shock Absorber Co., Centralia, Wash.
 Landis Engineering & Mfg. Co., 231 Ringgold St., Waynesboro, Pa.
 Lovejoy—See Packard Engineering Co.

Everything is listed under the NOUN or principal word

"Bull Dog" Bounce Absorber



One single style, at one single price, takes care of cars of all weights and models. No other shock-absorbing device has this feature—can be easily adjusted to suit cars of any weight, springs of any rigidity, or the preference of any driver.

Easily attached; needs no oiling; has no metal parts that will wear and break. No. 11 is made to fit practically all cars; No. 12 for all cars already drilled, or cars on which special drilling will give a better installation. Your dealer will sell you the right one for your car.

PRICE { Per full set of 4.....\$24.00
Per pair, front or rear..... 12.00

CHANNON-HUGHSON COMPANY

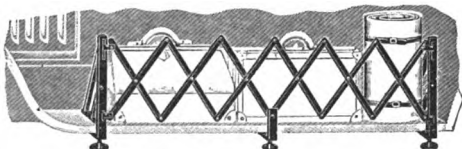
229-233 West Erie Street

CHICAGO, U. S. A.

Star Adjustable Luggage Carrier

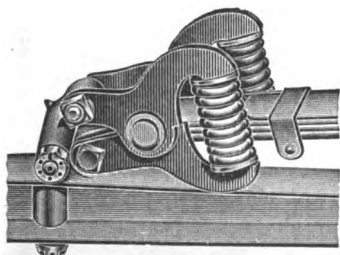
RUNNING BOARD TYPE

Fastens to running board by thumb screw as shown. Easily attached or detached in a moment. Can be folded and carried under seat or in tool box when not in use. Black enamel finish. Fits any car. Each\$6.00



ATTACHED TO RUNNING BOARD

Star Shock Absorbers—For Ford Cars



Star W-X Shock Absorber provides four cushions of comfort. One for each corner of your car.

Easy to attach. You remove only the shackles and put the W-X in their place.

Per set (of four) list.....\$8.00

Also manufacture other accessories: Radius Rod Supports, Rear Axle Truss Rods, Bench and Power Grinders.

Write for Discounts

Manufacturers

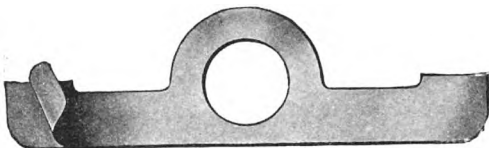
STAR SPECIALTY MANUFACTURING CO.

CHICAGO

227 West Erie Street

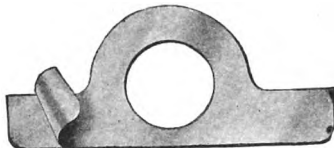
ILLINOIS

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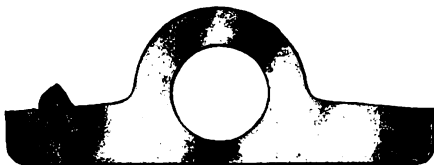
FORD No. 1
Crankshaft Rear Bearing

1/64" thick	each, \$0.08
1/32" thick	each, .13



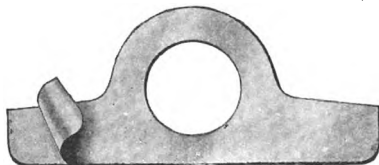
FORD No. 2
Crankshaft Front and Center Bearing

1/64" thick	each, \$0.06
1/32" thick	each, .09



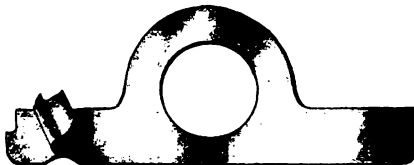
DODGE
Crankshaft Front Bearing

1/64" thick	each, \$0.08
1/32" thick	each, .08
1/16" thick	each, .12
1/8" thick	each, .16



DODGE
Crankshaft Center Bearing

1/64" thick	each, \$0.06
1/32" thick	each, .08
1/16" thick	each, .12
1/8" thick	each, .16



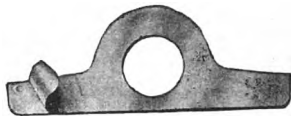
DODGE
Crankshaft Rear Bearing

1/64" thick	each, \$0.06
1/32" thick	each, .08
1/16" thick	each, .12
1/8" thick	each, .16



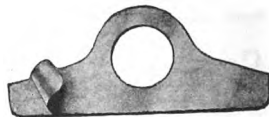
FORD No. 4
Connecting Rod

1/64" thick	each, \$0.05
1/32" thick	each, .06



CHEVROLET FOUR-NINETY
Connecting Rod

1/64" thick	each, \$0.04
1/32" thick	each, .06
1/16" thick	each, .10



OVERLAND
Connecting Rod

1/64" thick	each, \$0.06
1/32" thick	each, .07
1/16" thick	each, .12



MAXWELL
Connecting Rod

1/64" thick	each, \$0.04
1/32" thick	each, .06
1/16" thick	each, .10



DODGE
Connecting Rod

1/64" thick	each, \$0.05
1/32" thick	each, .07
1/16" thick	each, .12
1/8" (1/16" steel, 1/16" laminated)	each, .15

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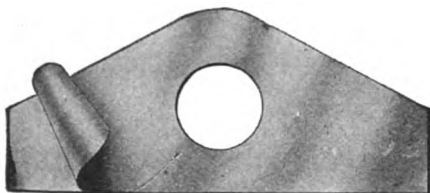
CONTINENTAL 7-N
Connecting Rod

1/64" thick	each.	\$0.04
1/32" thick	each.	.06
1/16" thick	each.	.10
1/8" thick	each.	.20



CONTINENTAL 7-W
Connecting Rod

1/64" thick	each.	\$0.04
1/32" thick	each.	.06
1/16" thick	each.	.10



FIT-ALL No. 1—the Shim That Can be Cut to Fit

1/64" thick	\$2.00 per box of 25
1/32" thick	3.00 per box of 25
Holes already punched, 13/32" for 3/8" bolts; 17/32" for 1/2" and 7/16" bolts. Laminations .003 in.	

Laminated Shims are made of Laminum, which is composed of layers of brass, .002" or .003" thick, joined together by a metallic binder. They look and act like solid shims, but *they peel*. To adjust a bearing with laminated shims, simply peel off the brass layers with a knife-blade until the shim fits. Stock sizes as illustrated, in packages of 25. Specify thickness. Any shape to order. Babbitted to make a complete babbitt bearing, if desired. Laminum in sheets, 6" x 36", all Laminum or part solid brass. Write for specifications and prices.

Laminated Shim Company, Inc.

14th St. & Governor Place, Long Island City, N. Y.

Detroit: Dime Bank Building
St. Louis: Mazura Mfg. Co.
Chicago: 1118 South Michigan Ave.



LAMINUM

SHOCK ABSORBERS, Friction, Hydraulic and Pneumatic (Cont'd)

Martin Shock Absorber Corp., 1361-1401 E. Slauson Ave., Los Angeles, Cal.
 Miller Shock Equalizer Co., 2020 E. 22nd St., Cleveland, O. "Millerize."
 Millerize—See Miller Shock Equalizer Co.
 Morey—See Universal Mfg. Co.
 National Steel Products Co., 1611-21 Crystal Ave., Kansas City, Mo. "Shockzezer."
 Packard Engineering Co., 1824 Euclid Ave., Cleveland, O. "Lovejoy."
 (See page 767.)
 Parker Shock Absorber Co., 221 S. Hoyne Ave., Chicago, Ill.
 Retrac Co., 67 Sixth St., Long Island City, N. Y.
 Shockzezer—See National Steel Products Co.
 Universal Mfg. Co., 2633 Randolph St., Lincoln, Neb. "Morey."
 Watson Co., John Warren, 24th & Locust Sts., Philadelphia, Pa.
 Velvet—See Blackledge Mfg. Co.
 Westinghouse Air Spring Co., Smedley Bldg., New Haven, Conn.

SHOCK ABSORBERS, Friction, Hydraulic and Pneumatic for Fords

Bethlehem Spark Plug Co., Bethlehem, Pa. (See page 649.)
 Bull Dog—See Channon-Hughson Co.
 C. S.—See Canton Specialty Co.
 Canton Specialty Co., Canton, Ill. "C. S."
 Channon-Hughson Co., 227-33 W. Erie St., Chicago, Ill. "Bull Dog."
 (See page 769.)
 Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.
 Gennett & Longyear, Longyear Bldg., Marquette, Mich.
 Gilman-Davis Co., 224 S. Michigan Ave., Chicago, Ill. (See page 765.)
 Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 765.)
 Landis Engineering & Mfg. Co., 231 Ringgold St., Waynesboro, Pa.
 Lang Engineering Co., J. S., 6 Park Sq., Boston, Mass. "National."
 National—See Lang Engineering Co.

SHOCK ABSORBERS, HYDRAULIC—See Shock Absorbers, Friction, Hydraulic and Pneumatic

SHOCK ABSORBERS, PNEUMATIC—See Shock Absorbers, Friction, Hydraulic and Pneumatic

SHOCK ABSORBERS, Spring

Allith-Prouty Co., Danville, Ill. (See page 703.)
 Alspring Shock Absorber Mfg. Co., Minneapolis, Minn. (See page 767.)
 Altra—See Temco Electric Motor Co.
 Amco—See American Metals Corp.
 American Metals Corp., 1022 E. Michigan St., Indianapolis, Ind. "Amco."
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Halladay Shock Absorbers.)
 (See page 247.)
 Auto Accessory Mfgy., 34 Depot St., Canistota, N. Y. "Eureka."
 Blackledge Mfg. Co., 341 E. Ohio St., Chicago, Ill. "Velvet."
 Brock Shock Absorber Co., Los Angeles, Calif.
 Buckeye—See Central Brass & Fixture Co.
 C-C—See Cox Brass Mfg. Co.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Champion Products Mfg. Co., 278 Halsey St., Newark, N. J. (See page 820.)
 Cox Brass Mfg. Co., Albany, N. Y. "Coxajusto," "C-C." (See page 168.)
 Coxajusto—See Cox Brass Mfg. Co.
 Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 673.)
 Curtis—See Garden City Spring Works
 De Luxe Specialty Co., 176 Brooklyn Ave., Boston, Mass. (Me., N. H., Vt., Mass. and R. I. (Distributors for Hayes Shock Absorbers.) (See page 729.)
 Dual Mfg. Co., 1424 Nicollet Ave., Minneapolis, Minn.
 E. & W. Mfg. Co., Cedarburg, Wis.
 Eureka—See Auto Accessories Mfgy.
 Fernald Shock Absorbing Spring Suspension Co., 170 Summer St., Boston, Mass.
 Garden City Spring Works, 2300 Archer Ave., Chicago, Ill. "Curtis."
 H. L. G. Mfg. Co., W. 29th St. & Canal, Indianapolis, Ind.
 Halladay, Co., I. P., Decatur, Ill. (See page 171.)
 Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 765.)
 Hassler, Robt. H., 1050-61 Naomi St., Indianapolis, Ind.
 Hayes Shock Absorber Co., 1023 Washington Ave., S., Minneapolis, Minn.
 Headlight Support Co., 728 Woodward Ave., Detroit, Mich.
 Hood Shock Preventer Co., 462 Turk St., San Francisco, Cal.
 J. M. Shock Absorber Co., 108 W. 52d St., New York, N. Y.
 Johnson—See Temme Spring Corp.
 K. T. Lever Spring Co., 832 W. 70th St., New York, N. Y.
 Kim Mfr. Co., Merrimac, Mass.
 Kreft Mfg. Co., Victor, Two Rivers, Wis.
 Marvel Machinery Co., Minneapolis, Minn.
 Marvel Shock Absorber Corp., 6520 Carnegie Ave., Cleveland, O.
 Moog—See St. Louis Spring Co.
 Nash Shock Absorber Co., Indianapolis, Ind.
 Northwestern Spring Mfg. Co.—See United Sales Co.
 Noxal Co., 29 S. Clinton St., Chicago, Ill.
 Sager Co., J. H., 36-38 S. Water St., Rochester, N. Y.
 St. Louis Spring Co., 3042 Locust St., St. Louis, Mo. "Moog."
 Starkweather-Snook Corp., 246 First St., Moline, Ill.
 Steel Wings Co., 670 Washington Blvd., Chicago, Ill. (See page 765.)
 Stewart Mfg. Co., Oakland, Cal. (See page 373.)
 Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill. (See page 707.)
 Temco Electric Motor Co., 25 Sugar St., Leipsic, O. "Alta." (See page 877.)
 Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. "Johnson." (See page 787.)
 Triple Action Spring Co. of New York, 549 W. 55th St., New York, N. Y.
 Twin Spring Sales Co., 266 Essex St., Salem, Mass.
 U. S. E. Corp., 7 W. 61st St., New York, N. Y.
 United Sales Co., 510 Temple Ct., Minneapolis, Minn. (Sole Distributors for Northwestern Spring Mfg. Co., Minneapolis, Minn.)
 Velvet—See Blackledge Mfg. Co.

Everything is listed under the NOUN or principal word

H&D

SHOCK ABSORBERS

PATENTED

MAY 8, 1918. APR. 23, 1918.

ALLITH-PROUTY CO.

DANVILLE,
ILL.
U.S.A.

FOR EVERY MODEL

FORD

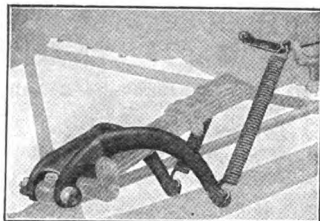
PASSENGER CARS
AND TRUCKS

GARAGE MEN—OWNERS—DRIVERS—BOOST

H & D SHOCK ABSORBERS

Superior engineering has developed this cantilever arm (practical type) absorber. They are the most sensitive, therefore most efficient made. Highly increase comfort and cut operating cost and wear and tear to a minimum.

Only absorber with Drop Forge Steel Perches. Cold Rolled Steel Bolts—Hardened. Attach easily. Sets come complete to fit any model or type Ford Passenger Car or Truck. When ordering specify type of car.

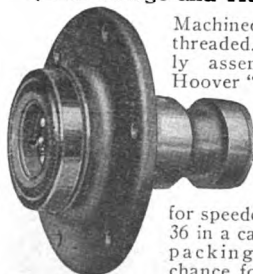


HUBS for FORDS—FRONT AND REAR

Basic material of these hubs is Allith-Prouty own high-grade Malleable Iron. This with high-class craftsmanship put on castings permits offering Front and Rear Hubs for Fords of distinctly superior quality.

FRONT HUB

(Less Flange and Hub Bolts)



Machined; drilled; threaded. Completely assembled, with Hoover "A" balls, inner and outer races, felt ring and dust collar. Drilled

for speedometer gear. 36 in a case. Careful packing eliminates chance for any damage.

Approx. shipping weight: 185 lbs. per case.

REAR HUB

(Less Flange and Hub Bolts)



Complete machining. Taper bored; La-Pointe broached keyway. Threaded for cap, ready to install. Exceptionally high quality of workmanship.

36 in a case. Carefully packed to guard against any damage in transit. Approx. shipping weight: 175 lbs. per case.

If you are unable to secure these products in your locality—write us direct.

ALLITH-PROUTY CO.

Danville, Ills.

Owning and Operating the Danville Malleable Iron Co.

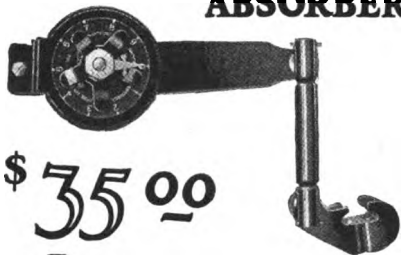
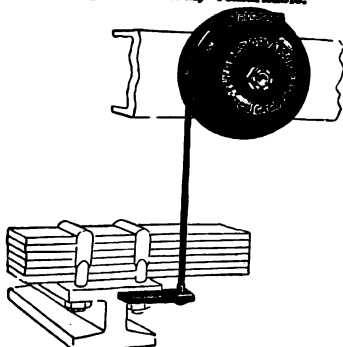
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SHOCK ABSORBERS, Spring, for Fords

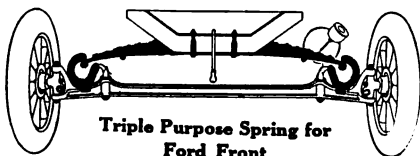
Accesso Mfg. Co., 99 State St., Boston, Mass.
 Allith-Prouty Co., Danville, Ill.
 (See page 763.)
 Alford—See Hoffman Mfg. Co.
 Alspring Shock Absorber Mfg. Co., Minneapolis, Minn. (See page 767.)
 Alta—See Temco Electric Motor Co.
 Alterfor Bros. Co., Peoria, Ill. "Parnells."
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 ARG Auxiliary Spring Co., Birmingham, Ala.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern Distributors for Halladay Shock Absorbers.)
 (See page 247.)
 Auto Specialties Mfg. Co., St. Joseph, Mich. "Drednaut." (See page 463.)
 B. B.—See Bayne Mfg. Co.
 Bayne Mfg. Co., Bushnell, Ill. "B. B."
 (See page 149.)
 Blackledge Mfg. Co., 341 E. Ohio St., Chicago, Ill. "Velvet."
 Brownlee Mfg. Co., 100-112 W. South St., Indianapolis, Ind.
 Buckeye De Luxe—See Central Brass & Fixture Co.
 Burpee-Johnson Co., 1910 Singleton St., Indianapolis, Ind. "Float a Ford."
 Carr Mfg. Co., 910 E. Main St., Hoopestown, Ill. "O. K."
 Central Brass & Fixture Co., Segler & Hughes Bldg., Springfield, O. "Buckeye De Luxe."
 Champion Shock Absorber Sales Co., 918 N. Senate Ave., Indianapolis, Ind.
 Chicago Ignition Supply Co., 1440 S. Michigan Ave., Chicago, Ill. "Nabob."
 Comfort Shock Absorber Co., Hempstead, N. Y.
 Cox Brass Mfg. Co., Albany, N. Y.
 (See page 168.)
 Crabtree Shock Absorber Co., 1250 W. 76th St., Cleveland, O. (See page 767.)
 Cushion-Coil—See Pressed Metal Parts Co.
 Defender Auto-Lock Co., 216-22 Locust St., Allegan, Mich.
 Dennis Shock Absorber Co., 304 W. 63d St., Chicago, Ill. (See page 775.)
 Disco Electric Mfg. Co., 2100 Howard St., Detroit, Mich. "Van Briggie."
 Dotti Mfg. Co., 128 S. Pinckney St., Madison, Wis.
 Drednaut—See Auto Specialties Mfg. Co.
 Duplex Cantilever Spring Co., 178 N. Dearborn St., Chicago, Ill.
 Eckhouse & Co., Walter, 616-22 S. Michigan Blvd., Chicago, Ill. (Sales Dept. for F. H. Webber Co., Hoopestown, Ill. "W. & C.")
 (See page opposite Title Page.)
 Eclipse—See Kanestoe Mfg. Co.
 Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (New Jersey Distributors for "Apco" Shock Absorbers.)
 (See page 495.)
 Fidelity Mfg. Co., 921 E. 15th St., Kansas City, Mo. "Hilliard." (See page 798.)
 Flexible Rider—See R. & R. Mfg. Co.
 Flexlever—See Halladay Co.
 Float a Ford—See Burpee-Johnson Co.
 Gemco Mfg. Co., 696 S. Pierce St., Milwaukee, Wis. "Tri-Chek."
 (See page 167.)
 Grey Goose—See Indiana Parts Co.
 H. L. G. Co., 29th & Canal Sts., Indianapolis, Ind.
 Halladay Co., L. P., Decatur, Ill. "Flex-lever." (See page 171.)
 Handee—See Racine Handy Mfg. Co.
 Hartford, Edward V., 35 Warren St., New York, N. Y. (See page 705.)
 Hassler, Robt. H., 1050-61 Naomi St., Indianapolis, Ind.
 Hilliard—See Fidelity Mfg. Co.
 Hoffman Mfg. Co., Andrew, 5034-38 S. State St., Chicago, Ill. "Alford."
 Home Light Co., 3853 Milwaukee Ave., Chicago, Ill.

Hood Shock Preventer Co., 462 Turk St., San Francisco, Cal.
 Indiana Parts Co., Richmond, Ind. "Grey Goose."
 J. M. Shock Absorber Co., 108 W. 53d St., New York, N. Y.
 Johnson—See Temme Spring Corp.
 K. S. Supply Co., 348 S. Dearborn St., Chicago, Ill.
 Kanestoe Mfg. Co., Main St., Canistota, N. Y. "Eclipse."
 Kim Mfg. Co., Merrimac, Mass.
 King Washing Machine Co., Wolcott, Ind. "Winger Ride E-Z."
 Landsfield Mfg. Co., 510 First Ave., West Haven, Conn.
 Little Giant—See Republic Auto Parts Co.
 Luxry—See Specialty Device Co.
 Nabob—See Chicago Ignition Supply Co.
 Nash Shock Absorber Co., Indianapolis, Ind.
 O.K.—See Carr, H. G.
 P. V. Auto Co., Arctic, R. I. "Pvaco."
 Parnells—See Alterfor Bros. Co.
 Pressed Metal Mfg. Co., Barstow St., Waukesha, Wis. "Cushion Coil."
 (See page 775.)
 Pvaco—See P. V. Auto Co.
 R. & R. Mfg. Co., 308 S. La Salle St., Chicago, Ill. "Flexible Rider."
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Republic Auto Parts Co., 31-35 Tenth St., Long Island City, N. Y. "Ridewell," "Little Giant."
 Rex—See Volute Spring Shock Absorber Co.
 Ridewell—See Republic Auto Parts Co.
 Ride-E-Z Spring Co., Michigan Trust Bldg., Grand Rapids, Mich.
 Sager Co., J. H., 36-38 S. Water St., Rochester, Specialty Device Co., 106 W. Third St., Cincinnati, O. "Luxry."
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "W. X." (See page 759.)
 Starkweather-Snook Corp., 246 First St., Moline, Ill.
 Steelbilt—See Walker Mfg. Co.
 Stone Mfg. Co., Chicago, Ill.
 (See page 707.)
 Temco Electric Motor Co., 25 Sugar St., Leipsic, O. "Alta." (See page 877.)
 Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. "Johnson."
 (See page 787.)
 Tri-Chek—See Gemco Mfg. Co.
 Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.
 Triple Action Spring Co. of New York, 549 W. 59th St., New York, N. Y.
 Twin Spring Sales Co., 266 Essex St., Salem, Mass.
 U. S. B. Corp., 6-8 62d St., New York, N. Y.
 Universal Sales Co., Odd Fellows Bldg., Indianapolis, Ind.
 Universal Shock Absorber & Mfg. Co., 2635 Milwaukee Ave., Chicago, Ill.
 Universal Trans-Lever Spring Co., 14th & Howard Sts., Detroit, Mich.
 Van Briggie—See Disco Electric Mfg. Co.
 Velvet—See Blackledge Mfg. Co.
 Volute Spring Shock Absorber Co., Mt. Vernon, N. Y. "Rex."
 W-X—See Star Specialty Mfg. Co.
 W. & C.—See Eckhouse & Co.
 Walker Mfg. Co., Racine, Wis. "Steelbilt." (See page 485.)
 Webber & Co., F. H.—See Eckhouse & Co.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)
 Wilcox Pressed Steel Co., 1713-35 Armitage Ave., Chicago, Ill.
 Winger Ride E-Z—See King Washing Machine Co.

Everything is listed under the NOUN or principal word

*The New Improved***Hartford****SHOCK
ABSORBER****\$ 35 00****Per set
of Four***Complete with
attaching fittings
and blueprint***Edward V. Hartford, Inc.**
35 Warren St. New York City, U. S. A.**GILMAN
SHOCK ABSORBER****Takes the Kick from the Recoil**
Smoothly eases off the recoil of the springs.
Gives riding results truly remarkable.

One type of fitting for such popular cars as Dodge, Buick, Maxwell, Chevrolet, Oakland, Dort, Hupp, etc.

*Easily Attached. Guaranteed.***GILMAN - DAVIS COMPANY**
224 South Michigan Avenue, Chicago**STEEL WINGS****Triple Purpose Spring for
Ford Front****Guaranteed for the life of the Ford.**
No need for other Shock Absorbers.
Retails for \$15.00.**STEEL WINGS**

Shock Absorbers give perfect comfort at low cost. For front or rear. A fast selling line of real merit. Write for Jobbers' and Dealers' discounts.

**STEEL WINGS
CO.**Spring Dept.
607 Washington
Bldg.
Chicago, Ill.**"BURGISWITCH"**
Switch HeadlightA switch that attaches on the steering wheel and controls the brightening and dimming of the headlights.
Easy to install.**Price, \$1.75****Can be installed on any car****WALTER S. BURGESS MFG. CO.**
500 Pleasant Street
ST. JOSEPH :: MICH.

Please mention The Automobile Trade Directory

SHOES, Brake, for Fords*(Including both lined or faced and unlined shoes)*

Adamson Mfg. Co., East Palestine, O.
 Am-Pe-Co Sales Co., Marshalltown, Ia.
 Bailey Co., James, Portland, Me. "J. O. M."
 Bemiller Foundry & Machine Co.—See Eckhouse & Co.
 Big J.—See Jefferson Rubber Co.
 Buckeye—See Central Brass & Fixture Co.
 Canton Co., A. S., 174 Franklin St., New York, N. Y.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Clamert Mfg. Co., Latrobe, Pa.
 Clipper Tool Co., 284 Mills St., Buffalo, N. Y.
 Dunham Co., Thos., Aurora, Ill. (See page 145.)
 Eckhouse & Co., Walter, 616-223 S. Michigan Blvd., Chicago, Ill. (Factory Distributors for Bemiller Foundry & Machine Co., Belleville, O. (See page opposite Title Page.)
 Emco Mfg. Co., Binghamton, N. Y.
 Ever-Safe—See Never Break Products Co.
 Fulton Co., 75th and National Aves., Milwaukee, Wis. (Distributors.) (See pages 569 to 574.)
 Glisco—See Keystone Products Co.
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 933.)
 Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.
 Howell Co., W. H., State & River Sts., Geneva, Ill.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 J. O. M.—See Bailey Co.
 Keystone Products Co., St. Louis, Mo. "Glisco."
 Lowe Motor Supplies Co., 245-47 W. 55th St., New York, N. Y.
 Monroe Automotive Equipment Mfg. Co., Monroe, Mich. (See page 571.)
 Motor Parts Machine Co., 646-49 S. Pierce St., Milwaukee, Wis.
 Never Break Products Co., Bangor, Pa. "Ever Safe." (See page 351.)
 Perfection—See Worthington, A. P.
 Raybestos Co., Bridgeport, Conn. (See page 529.)
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., Middleton, Conn. "Rusco." (See page 530.)
 Safety First Brake-Shoe Co., 313 S. Clinton St., Chicago, Ill.
 Spencer's Sons, I. S., Fair St., Guilford, Conn.
 Starr Bros, Bell Co., East Hampton, Conn.
 Sterling—See Republic Auto Parts Co.
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.
 Vetex—See Victor Steel Stamping Co.
 Victor Steel Stamping Co., 3102 Downing St., Denver, Colo. "vetex."
 W-M Co., York, Pa.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)
 Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.
 Worthington, A. P., 700 N. Main St., Los Angeles, Cal. "Perfection."

SHOES, Inner Tire*(Shoes or sleeves to be used between outer shoe and inner tube as a protector and reinforcement. For Outer Shoes—See Sleeves, Tire Repair)*

Acme—See Chicago Tire Goods Co.
 Acme—See Eno Rubber Co.

Ajar—See Chicago Tire Goods Co.
 Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 871.)
 American—See Chicago Tire Goods Co.
 American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Tredkota."
 American Rubber & Tire Co., 100 Beach St., Akron, O.
 American Tire & Reinner Co., 413-15 Bridge St., Grand Rapids, Mich.
 Arlington—See Voorhees Rubber Mfg. Co.
 Atlas Rubber Co., 226 W. Grand Ave., Chicago, Ill.
 Atwell Mfg. Co., 825 N. Main St., Independence, Mo.
 Autocessory Sales Co., 542 W. Jackson Blvd., Chicago, Ill. "Insurt."
 Big J.—See Jefferson Rubber Co.
 Buckeye Reinner Producing Co., Lima, O. (See page 931.)
 Bull Dog—See Eastern Auto Specialty Co.
 Bull Dog—See Pennsylvania Rubber Co. of America.
 Bull Dog—See Polson Rubber Co.
 Bull Dog Tire Repair Co., 18 S. Fifth Ave., Chicago, Ill.
 C-O-T—See Tingley & Co.
 Champion—See Stephens Rubber Co.
 Chicago Tire Goods Co., 1216 Webster Ave., Chicago, Ill. "Acme," "Ajax," "American."
 Climax Rubber Co., 21 W. Gay St., Columbus, O. "Maxotires." (See page 833.)
 Coffield Tire Protector Co., 117 W. Court St., Dayton, O.
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
 Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga. "Holdfast."
 Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind. "Interlock," "Rival," "Leader."
 Dural Rubber Corp., Flemington, N. J. (See page 349.)
 Eastern Auto Specialty Co., 926 Columbia St., Utica, N. Y. "Bull Dog."
 Eastern Tire & Rubber Co., 78 W. Second St. (South Boston), Boston, Mass.
 Egyptian—See Polson Rubber Co.
 Eno Rubber Co., 1026 S. Los Angeles St., Los Angeles, Cal. "Acme," "Peerless," "Samson," "Leech," "Jumbo."
 Essex Rubber Co., May & Beakes Sts., Trenton, N. J.
 Ever Last Tread Co., 128 E. New York St., Indianapolis, Ind.
 Excel Rubber Co., 116 Broad St., Wadsworth, O. "X. L."
 Falls Rubber Co., Cuyahoga Falls, O.
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Firestone Tire & Rubber Co., Miller & Swetzer Aves., Akron, O.
 First National Tire & Reinner Co., 55 Compan Ave., N. W., Grand Rapids, Mich. (See page 775.)
 Fisher Mfg. Co., 735 O St., Lincoln, Neb.
 Fisher Rubber Co., 1816 St. Clair Ave., Cleveland, O.
 Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
 General Tire & Rubber Co., E. Market St., Akron, O. "Red Coat."
 Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O.
 Goodrich Co., B. F. S. Main St., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O.
 Hagstrom Bros. Mfg. Co., Lindsborg, Kans.
 Harkness & Fowler, 119 W. Main St., Louisville, Ky.

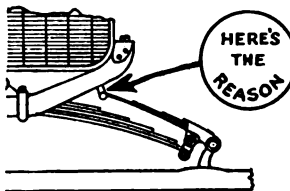
Everything is listed under the NOUN or principal word

CRABTREE

SHOCK ABSORBER

(FOR FORD CARS)

Eliminates excessive side sway. Acts as a snubber on the rebound. Produces a smooth easy riding quality that is making sales for our dealers

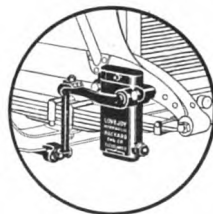


Write for Information

CRABTREE SHOCK ABSORBER CO.
1250 WEST 76th STREET CLEVELAND, OHIO

Why Dealers Should Sell LOVEJOY HYDRAULIC Shock Absorbers

They eliminate all side sway.
They give equal comfort with one passenger or seven.
They do not require periodic repairs or attention.
They never require lubrication or adjustment.
They are sealed to keep oil in and dirt out.
They are silent and inconspicuous.
You can sell on the basis of an absolute guarantee. We stand behind you.
Price per set of four, with all attachments, \$115 F. O. B. Cleveland.
Generous discounts to dealers. Additional charge for installing. In ordering, specify make and model of car.



They last as long as your car—
and make your car last longer

THE PACKARD ENGINEERING CO., 1824 Euclid Ave., Cleveland
LOVEJOY MFG. CO., 1040 Commonwealth Ave., Boston, Mass.

The following distributors are prepared to give you complete service on Lovejoy Hydraulic Shock Absorbers

D. & W. Sales Company.

1471 Main St.,
Buffalo, N. Y.

Inventors' Products Co.,
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Columbus, Ohio.

H. Wilcox Sales Company,
648 N. Meridian Ave.,
Indianapolis, Ind.

Rimon Brothers,
3542 So. Michigan Ave.,
Chicago, Ill.

Scranton Motor Car Co.,
430 Dix Court,
Scranton, Pa.

Black Fraser Mot. Car Co.,
Columbia, S. C.

Henry E. Schmidt,
1529 Eleventh Ave.,
Seattle, Wash.

Park Road Sales & Ser. Co.,
Casper, Wyo.

Gramm Bernstein Motor
Sales Co.,
211 Spahr St.,
Pittsburgh, Pa.

George Glimers,
9 Congress St.,
Bradford, Pa.

Ruben Supply Co.,
305 Fifth Ave.,
McKeesport, Pa.

B-B Specialty Co.,
287-81 East Bay St.,
Charleston, S. C.

Lovejoy Sales Co.,
304 Main St.,
Jacksonville, Fla.

Bea Motor Co.,
204 Throckmorton St.,
Ft. Worth, Tex.

United Motor Products Co.,
30th & McGee Trafficway
Kansas City, Mo.

J. T. McCann,
Appleton, Wis.

Murphy Ruth Motor Co.,
Green Bay, Wis.

Lovejoy Sales Co. of
St. Louis,
2807 Locust Ave.,
St. Louis, Mo.

Mr. J. Leder,
2034 Van Ness Ave.,
San Francisco, Calif.

W. B. Hogan,
215 14th St.,
Oakland, Calif.

Lovejoy Wisconsin,
545 Broadway,
Milwaukee, Wis.

Auto Mfg. Service Co.,
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Detroit, Mich.

Malley & Learmont,
Port Huron, Mich.

Automotive Parts Co.,
Winston-Salem, N. C.

Phelps & Co., Inc.,
18 Asylum St.,
Hartford, Conn.

Lovejoy Shock Absorber
Co.,
15-17 W. LaFayette Ave.,
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**FLEXIBLE
LAM-
INATED
STEEL ARCH
SPRING**



DEALERS WANTED

SATISFACTION OR MONEY REFUNDED

**FITS MOST CARS
NO FRictional
WEARING PARTS**

ALSPRING
SHOCK ABSORBER MFG. CO.
MINNEAPOLIS, MINN. U. S. A.

The Most Practical SHOCK ABSORBER Ever Devised

PRactical in every detail of construction and built upon the soundest principle possible, Alspring Shock Absorbers are the best insurance against deterioration of expensive automobiles.

Alsprings consist of coil springs mounted within a curved, flexible, laminated steel spring of great strength. Thus two road shocks are absorbed by both features, yet neither one must bear the entire burden. Doubly effective and virtually indestructible are these Alspring Shock Absorbers.

Please mention The Automobile Trade Directory

SHOES, Inner Tire (Continued)

Holdfast—See Diamond Holdfast Rubber Co.
 Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
 Inner Shoe Tire Co., Oakes & Ellsworth Sts., Grand Rapids, Mich. "Innershu," "Shurhold," "Klincher."
 Innershu—See Inner Shoe Tire Co.
 Insurt—See Autocessory Sales Co.
 Interlock—See Double Fabric Tire Co.
 Jefferson Rubber Co., Jefferson, Wis. "Big J."
 Jon-Con Tire Protector Co., 2124 N. 15th St., Philadelphia, Pa.
 Jumbo—See Eno Rubber Co.
 Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.
 Klincher—See Inner Shoe Tire Co.
 Lafayette Tire Co., 511-13 N. Ninth St., Lafayette, Ind.
 Leader—See Double Fabric Tire Co.
 Lee Tire & Rubber Co., 245 W. 58th St., New York, N. Y.
 Leech—See Eno Rubber Co.
 Magic—See Morse Co.
 Mason-Ryckoff Corp., 542 W. Jackson Blvd., Chicago, Ill. "Peerless," "Sturdy."
 Maxotires—See Climax Rubber Co.
 Mercer Rubber Co., Hamilton Square, N. J.
 Mid West Co., 30 Ionia Ave., S. W., Grand Rapids, Mich.
 Mile-Multiplier—See Tire In-Sole Mfg. Co.
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Miller Rubber Co., Akron, O.
 Miracle—See Rawhide Products Co.
 Morse Co., L. E., 205 N. Hyde Park Ave., Scranton, Pa. "Magic."
 National—See Stephens Rubber Co.
 Niagara Rubber Mfg. Co., 246-48 Herman St., Buffalo, N. Y.
 Peerless Mfg. Corp., 1523-24 St. Louis Ave., Kansas City, Mo.
 Peerless—See Eno Rubber Co.
 Peerless—See Mason-Ryckoff Corp.
 Peerless—See Polson Rubber Co.
 Pennsylvania Rubber Co. of America, Jeanette, Pa. "Bull Dog."
 Perfection—See Stephens Rubber Co.
 Perma-Lee Mfg. Co., Wilkes-Barre, Pa. (See page 923.)
 Perry Auto Co., 209 Seventh St., Pittsburgh, Pa. "Security."
 Phillips & Co., L. F., 1444 S. Morgan St., Chicago, Ill.
 Planet Rubber Co., 223 E. Ninth St., Los Angeles, Cal.
 Polson Rubber Co., 1657 Doan Ave., Cleveland, O. "Bull Dog," "Egyptian," "Peerless."
 Porcupine Sales Corp., Hutton Bldg., Spokane, Wash.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Racine Rubber Co., Racine, Wis. (See page 867.)
 Rawhide Products Co., 1334 Broadway, New York, N. Y. "Miracle."
 Ray Tire & Rubber Co., 533 Rees St., Chicago, Ill.
 R-E—See Roose Mfg. Co.
 Red Coat—See General Tire & Rubber Co.
 Re-Miller Rubber Co., Ashland, O.
 Reliable—See Stephens Rubber Co.
 Rival—See Double Fabric Tire Co.
 Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E."
 Samson—See Eno Rubber Co.
 Security Blow-out Holder Mfg. Co., Leggett Bldg., Fairfield, Ia.

Security—See Perry Auto Co.
 Shur-Hold—See Inner Shoe Tire Co.
 Spencer—See Voorhees Rubber Mfg. Co.
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo. "Reliable," "Champion," "National," "Perfection," "Wear-ever."
 Sterling Tire Corp., Rutherford, N. J.
 Stretchless Inside Tire Co., 518 Golden Gate Ave., San Francisco, Cal.
 Sturdy—See Mason-Ryckoff Corp.
 Sturges Tire & Rubber Co., 26th & Union Sts., Oakland, Cal.
 Superior—See Stephens Rubber Co.
 Thermoid Rubber Co., Trenton, N. J. (See page 531.)
 Tingley & Co., Chas. O., Ross St. & St. Geo. Ave., Rahway, N. J. "C-O-T."
 Tire In-Sole Mfg. Co., Western Ave., Findlay, Ohio. "Mile Multiplier."
 Tredekote—See American Automobile Accessories Co.
 United States Tire Co., 1790 Broadway, New York, N. Y. (See page 863.)
 Viking—See Voorhees Rubber Mfg. Co.
 Vittalco—See Continental Rubber Works.
 Voorhees Rubber Mfg. Co., 29-54 Eastwick Ave., Jersey City, N. J. "Arlington," "Spencer," "Viking."
 Vulco—See Gates Rubber Co.
 Waban Webbing Co., 301 Essex St., Boston, Mass.
 Wear-ever—See Stephens Rubber Co.
 X-L—See Excel Rubber Co.

SHOP BOXES—See Boxes, Sheet Metal

SHOP STOOLS—See Stools, Steel Shop

SHOP VULCANIZERS—See Vulcanizers, Shop.

SHOVELS, COLLAPSIBLE—See Spades, Collapsible

SHOWS—See Expositions and Shows

SHUTTERS, Automatic Radiator

(Metal Shutter automatically opened or closed by a thermostat—See also Regulators, Water; Also Valves, Water Regulating. For hand operated Shutters—See Shutters, Metal Radiator)

Automatic Radiator Protector Co., 2409 Humboldt Ave. S., Minneapolis, Minn.

Essential Automotive Products Co., 511 W. 42nd St., New York, N. Y. "Thermo." (See page 783.)

Pines Mfg. Co., Dept. E, 408 N. Sacramento Blvd., Chicago, Ill. "Winterfront." (See page 686.)

Thermo—See Essential Automotive Products Co.

Winterfront—See Pines Mfg. Co.

SHUTTERS, Automatic Radiator for Fords

(Metal Shutter automatically opened or closed by a thermostat—See also Regulators, Water; Also Valves, Water Regulating. For hand operated Shutters—See Shutters, Metal Radiator)

Amco—See American Metals Corp.

American Metals Corp., 1022 E. Michigan St., Indianapolis, Ind. "Amco."

Automatic Radiator Protector Co., 2409 Humboldt Ave. S., Minneapolis, Minn.

Essential Automotive Products Co., 511 W. 42nd St., New York, N. Y. "Thermo." (See page 783.)

Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich.

Pines Mfg. Co., Dept. E, 408 N. Sacramento Blvd., Chicago, Ill. "Winterfront." (See page 686.)

Thermo—See Essential Automotive Products Co.

Winterfront—See Pines Mfg. Co.

Everything is listed under the NOUN or principal word



PROVEN AUTOMOTIVE PARTS AND EQUIPMENT

For Passenger Cars—Trucks—Tractors—etc.

A SELLING SERVICE BACKED BY A BIG ORGANIZATION

Established over 17 years

THE ZINKE COMPANY, with its highly efficient sales organization and big export connections, sells 94% of all the automotive equipment jobbers in the United States, Canada, Hawaii, Cuba, the Philippines and various foreign outlets.

Our organization is departmentized and operated in accordance with the most modern and approved selling methods and relieves the manufacturer of the burden and expense of maintaining a sales department.

Consider the tremendous value of having your products introduced and marketed by an established selling organization operating directly in the markets you wish to enter, with an efficiency resulting from seventeen years' experience in this field.

By undertaking the sale of only merchandise of proven merit we have established a reputation that is in itself a tremendous influence in the marketing of anything in the line of automotive accessories and equipment.

We invite correspondence with manufacturers of automotive equipment in reference to the exclusive sale of their entire output.



Write for complete details

The Zinke Company

1323-1325 Michigan Ave.

Chicago, U. S. A.

THE ZINKE COMPANY

Indiana Head Lamps

These lamps have always been noted for their high quality, modern approved design and general serviceability. Standard finishes are all black and black and nickel.



No. 1119
11½ in. front
Prop centers 8¾ in.
No. 1020
10¼ in. front
Prop centers 7 in.
No. 916
9¼ in. front
Prop centers 7 in.



No. 916-F
9¼ in. front
Single stem prop for
late model Ford only



No. 415-F
4¼ in. front
Semaphore lens
For late model Ford
No. 415
Bracket to fit flat
or round props



No. 32
3¼ in. front
Red semaphore lens
Bracket will fit either
flat or round props
No. 32-F
Same as above with
prop for late model
Ford
No. 32-BB
Same as above
Props for Buick cars
No. 32 S. O.
Special double bulb
tail light assembly
for Ford cars



No. 9
9 in. front
Prop centers 7 in.



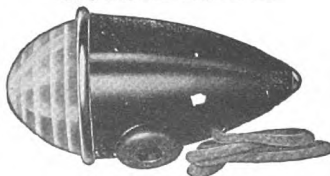
No. 11-G
10 in. front
Prop centers 8¾ in.
Heavy Duty Truck Type—Gas
No. 11-E
10 in. front
Prop centers 8¾ in.
Heavy Duty Truck Type—Electric



No. 10
10½ in. front
Prop centers 8¼ in.



No. 306
3¼ in. diam.
3 in. frosted star
glass lens



4¼ in. long, including lens
Extreme diameter, 2½ in.
Beehive moonstone lens



No. 717
7¼ in. front
Universal bracket
Fits all windshields
3 in. mirror

Information in regard to additional types of lamps will be furnished
MANUFACTURERS
INDIANA LAMP COMPANY, Connersville Ind.

SALES DEPARTMENT
THE ZINKE COMPANY

1323 MICHIGAN AVE.

CHICAGO, ILL.

THE ZINKE COMPANY

UTILITY AUTOMOTIVE PRODUCTS



Price For Set, \$1.25

Utility Pedals for Fords

"The absolutely necessary accessory for Fords" sums up in the words of the user the reasons for the popularity and fast selling qualities of Utility Pedals for Fords.

They transform small smooth Ford clutch and brake pedals into standard size, comfortable pedals. Heavy rubber pad and side flange prevent slippage. Instantly attached. No holes to drill. Made of pressed steel, black enamel finish. Price, per set, \$1.25.



UNIVERSAL WRENCH SET

Will fit automatically any nut of any size or shape. No screws to manipulate or parts to get out of order. All the advantages of expensive 16-piece socket wrench sets. Price, only \$3.50.

UTILITY

UNIVERSAL RIM WRENCH

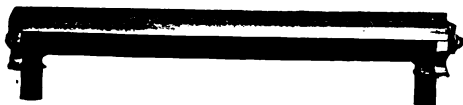


Fits every nut on every demountable rim. Absolutely automatic in action. All steel with indestructible handles and jaws even in the face of rough usage. Carries in any tool box. Finished in black enamel and nickel. Packed in fibre board cartons of 10. Price, \$1.75.

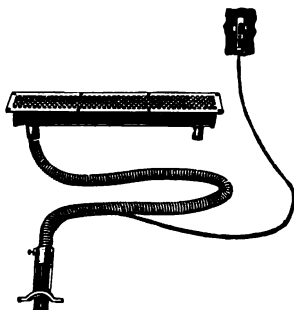
And the Famous

UTILITY PROTECTED HEATERS

Two Styles



A Model for Every Car



Note that Utility Heaters are made both Foot-Rail and Register types.

The medium size fittings are practically universal, in that they fit exhaust pipes on about 98% of cars in use.

Foot-Rail Type Prices

Utility Protected Heater, 27" long.....	\$20.00
Utility Front Seat Heater, 17" long, for front seats, coupes and small cars.....	12.50
Utility Jr., for Fords.....	9.00
Utility De Luxe for 8-cylinder cars, 27" long	25.00

Register Type Prices

Utility Register Type Heater, 27" long.....	\$30.00
Utility Jr., Register Type, 17" long, for coupes, Fords, tonneaus of other light cars and front seats of large cars	22.50
Utility Jr., Special for Buicks.....	25.00

Manufacturers

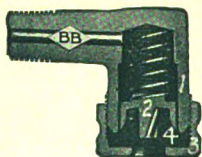
HILL PUMP VALVE CO. Belmont and Knox Aves., CHICAGO

Sales Department

THE ZINKE CO., 1323 Michigan Ave., Chicago



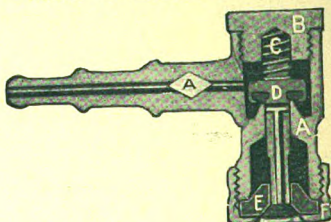
ROMORT AIR APPLIANCES



**Auto-
matic
Air
Valves**

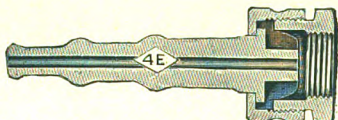
Style "BB." A light and inexpensive automatic air valve equipped with $\frac{1}{4}$ inch I. P. thread. Particularly designed for use with Romort Universal Hose Coupling.

Price each.....\$1.25



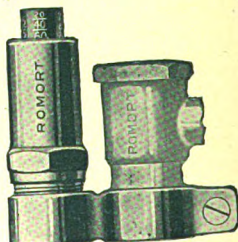
Style "A" for heavy duty. The styles "A" and "AA" are recommended. Style "A" is furnished with step-up type stem, which accommodates $\frac{1}{4}$ inch, $\frac{3}{8}$ inch or $\frac{1}{2}$ inch inside diameter hose. Special stems can be furnished to fit any style metallic hose.

Price each.....\$3.00



Style "4E" is made entirely of bronze, rust proof and substantially constructed. It will fit a $\frac{1}{4}$ inch pipe and $\frac{1}{4}$, $\frac{3}{8}$ or $\frac{1}{2}$ inch hose.

Price each.....\$0.90



Tire Tester Attachment, combines tire tester with Romort Automatic Air Valves. Simply slip gauge manufactured by A. Schrader's Son, Inc., into attachment.

Price each.....\$1.50

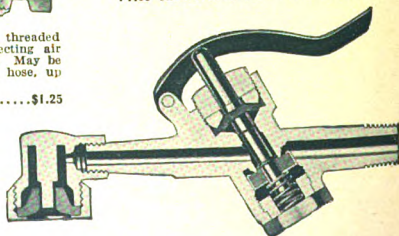


Universal Hose Coupling. For use with threaded stem automatic air valves, also for connecting air hose to tanks. Has $\frac{1}{4}$ inch I. P. thread. May be used with either rubber or metal covered hose, up to $\frac{3}{4}$ inch inclusive.

Price each.....\$1.25

Style "F." For any use where accurate control of air pressure is required. Absolutely leak proof. The only valve of this type now being made. All parts removable. The use of ROMORT Universal hose coupling is recommended in connection with this valve.

Price each.....\$3.50



Complete Catalog of Romort Appliances Sent on Request

Manufactured by
ROMORT MFG. CO.
Oakfield, Wis.

Sales Department
THE ZINKE COMPANY
1323 Michigan Ave., Chicago, Ill.

THE ZINKE COMPANY

ROMORT AIR & WATER STATION

A MONEY MAKER—NOT AN EXPENSE



S-B



S-C



S-D



12

Here are four popular styles to meet various requirements. We also make a ceiling type for indoor use, and one with base for electric motor and compressor.

Write our sales department for circular describing the entire line

Manufactured by

ROMORT MFG. CO.
Oakfield, Wis.

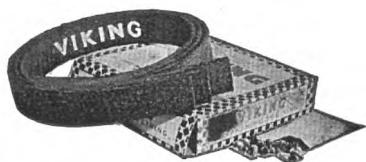
Sales Department

THE ZINKE COMPANY
1323 Michigan Ave., Chicago, Ill.

THE ZINKE COMPANY

VIKING

BRAKE AND TRANSMISSION LINING FOR FORD CARS



Use of long fibre yarn, closely and evenly woven and impregnated by special process makes Viking a lining capable of long wear without chatter. It will save the expense of frequent installations.

The display card illustrated below is beautifully lithographed in four colors. This is distributed free to dealers and is very effective for either counter or window use.

List price on Viking \$1.50 per set



Sales Department

The Zinke Co., 1323 Michigan Blvd., Chicago, Ill.

Manufacturers

Vogt Mfg. Corporation, Rochester, N. Y.

Weavers for More Than 40 Years

The First



Brings Life to
the Vanquished
Tire!

FIRST NATIONAL RELINERS are the result of several years of scientific effort to produce a Tire reinforcement that would not only prevent punctures and blow-outs, but actually double the ordinary life of any Tire.

That we have succeeded in our effort is evidenced by the constantly increasing demand for FIRST NATIONAL RELINERS.

Tire dealers and vulcanizers everywhere are recommending them to their customers. Why?

BECAUSE they are the last word in TIRE ECONOMY.

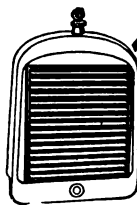
Write today for our dealers' price list. We absorb all freight charges to any point.

Manufacturers of

National Reliners, Skived Shoes, Inside Blow-out Patches, Inner Tubes, Spark Plugs.

First National Tire & Reliner Co.

55 Compau St.
GRAND RAPIDS, MICH.



OPEN

Quick Starting in Zero Weather

A warm motor means quick starting in winter. In getting quick response from motors, nothing helps more than a heat-retainer like the Universal Radiator Shutter—controlled from the driving seat.

UNIVERSAL RADIATOR SHUTTER

Keeps engine warm, conserves battery, prevents overworking starter and saves time. Made for the following cars:

Ford
1917 and later

Overland 4
1920-21

Chevrolet
1917 and later

Dodge
1917 and later

Buick
Models "E" 1918,
"H" 1919, "K" 1920

Nash
1917 and later

Order a supply of Universals today. They are fast selling winter accessories.

AUTO METAL PARTS CO.

624 East Locust Street
Des Moines, Iowa



CLOSED

CUSHION-COIL



FOR FORDS

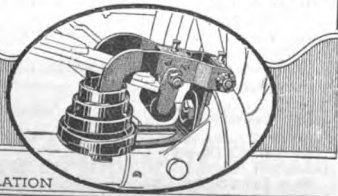
NO other like them on market. Telescoping flat spring coils, each coil five feet chrome vanadium steel. Cushion-Coils do not raise body. Snub rebound and side-sway. Placed between leaf spring and axle where shock absorbers belong. Fit all Fords. Retail price, \$21.00, set of four.

Pressed Metal Mfg. Co.

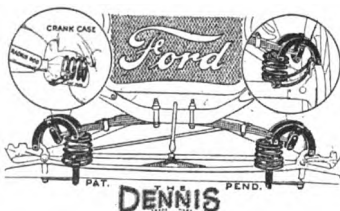
Barstow St. Waukesha, Wis., U. S. A.

DEALERS

Cushion-Coils are sold only through jobbers and dealers. Write for discounts and merchandising plan. A real opportunity.



REAR
INSTALLATION



Five-Attachment

Shock Absorber Outfit

for Fords

Absolute Satisfaction Guaranteed
Exclusive Agencies Appointed

The Dennis Shock Absorber Co.

OFFICE AND FACTORY
304 West 63rd Street
CHICAGO

Please mention The Automobile Trade Directory

SHUTTERS, Metal and Fibre Radiator

(Metal and Fibre Shutters for protecting the radiator in cold weather; For Radiator Covers—See Covers, Radiator; For Automatic Shutters See Shutters, Automatic)

Allen Auto Specialty Co., 16 W. 61st St., New York, N. Y. (See page 297.)

Amco—See American Metals Corp.

American Metals Corp., 1022 E. Michigan St., Indianapolis, Ind. "Amco."

Auto Metal Parts Co., 624 E. Locust St., Des Moines, Ia. (See page 775.)

Brinck Mfg. Co., Fifth Ave. & 24th St., Moline, Ill. (See page 931.)

Essential Automotive Products Co., 511 W. 42nd St., New York, N. Y. "Thermo." (See page 783.)

Peacock Radiator Guard Co., 275 Jefferson St., E. Detroit, Mich.

Thermo—See Essential Automotive Products Co.

U. S. E. Corp., 7 W. 61st St., New York, N. Y.

SHUTTERS, Metal and Fibre Radiator for Fords

(Metal and Fibre Shutters for protecting the radiator in cold weather; For Radiator Covers—See Covers, Radiator; For Automatic Shutters See Shutters, Automatic)

Amco—See American Metals Corp.

American Metals Corp., 1022 E. Michigan St., Indianapolis, Ind. "Amco."

Essential Automotive Products Co., 511 W. 42nd St., New York, N. Y. "Thermo." (See page 783.)

Evers-Savage Co., 1610 Cortland St., Chicago, Ill.

Thermo—See Essential Automotive Products Co.

U. S. Auto Equipment Co., Milwaukee & Michigan Sts., Milwaukee, Wis.

SHUTTERS, RADIATOR—See Shutters, Metal Radiator; Also Shutters, Automatic Radiator

SIDE LAMP BRACKETS—See Brackets, Side and Tail Lamp

SIDE LAMPS—See Lamps

SIDEWALK PUMPS—See Tanks and Systems, Gasoline Storage

SIGHT-FEEDS, Independent

(For installing on dash or instrument boards to show when oil is feeding or flowing properly—see also Gages)

American Brass & Iron Co., Detroit, Mich. (See page 203.)

Climax Motor Devices, Chagrin Falls, O.

Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

Mayo-Skinner Mfg. Co., 2115 Elston Ave., Chicago, Ill. (See page 251.)

Michigan Lubricator Co., 3643 Blaublein St., Detroit, Mich.

Morris Co., George W., Layard St. & Douglas Ave., Racine, Wis.

Nagel Electric Co. W. G., Toledo, O. (See page 405.)

National Gauge & Equipment Co., La Crosse, Wis. (See page 401.)

Pedersen Lubricator Co., 636 First Ave., New York, N. Y.

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.

United States Gauge Co., 44 Beaver St., New York, N. Y. (See page 401.)

Wilkinson Co., Wm. H., Main St., West Medway, Mass.

SIGNALS, Direction Indicating or Traffic

(Devices for attaching to a car to enable the operator to indicate when a turn or stop is about to be made)

A & B Automatic Signal Co., 55th St. & New Utrecht Ave., Brooklyn, N. Y.

Acme Signal Co., 71 Columbia St., Seattle, Wash.

Air-Way Electric Appliance Corp., 618 Broadway, Toledo, O. "FlaRay."

Arm-O-Phore—See Casey-Hudson Co.

Aro—See Smith Co.

Atma—See Rathbun & Fletcher.

Auto Equipment Co., 36 Pearl St., Hartford, Conn.

Auto Indicator Co., 210-18 Ottawa Ave., N. W., Grand Rapids, Mich. (See page 777.)

Auto Safety Signal Co., 197 State St., Rochester, N. Y. "Signal-Lite."

Auto Signal Mfg. Co., 1610 Jefferson St., Sullivan, Ill. "Comer."

Auto Stop-Lite Co., 2156 E. Fourth St., Cleveland, O. "Beacon."

Auto Tail Light Co., Shelbyville, Ind. "Safety First."

Automatic Safety Signal Co., Press Bldg., Portland, Me. "Wallace."

Automobile Appliances Co., Finance Bldg., Philadelphia, Pa. "Vacu."

Automobile Device Co., Union National Bank Bldg., Cleveland, O. "Trafo-Lite."

Automotive Accessory Co., Unity & Wingo-hocking Sts., Philadelphia, Pa. "Autophore."

Autophore—See Automotive Accessory Co.

B. & M. Co., Ambler, Pa. "Day-n-nite."

Bates—See Ryan Corp.

Beacon—See Auto Stop-Lite Co.

Beacon Stop-Lite Co., 515-17 Huron Road, Cleveland, Ohio.

Begley Mechanical Corp., Beekman St., New York, N. Y. "Tel-U."

Bradley Co., H. E., 720 S. Fourth St., Minneapolis, Minn. (See page 777.)

Britton Auto Signal Co., 1137 Champlain St., Toledo, O.

Buff Mfg. Co., Wichita, Kans.

Bunyan Mfg. Co., 9805 Madison Ave., Cleveland, O. "Tell-U-When."

Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. "Arm-O-Phore." (See pages 607 and 741.)

Chicago Automatic Signal Co., 56 W. Randolph St., Chicago, Ill.

Chicago Die & Specialty Co., 553 W. Monroe St., Chicago, Ill. "Kobzy."

Comer—See Auto Signal Mfg. Co.

Cowles & Co., C., New Haven, Conn. (See page 451.)

Coward Auto Supply Co., 222 Elliot St., Boston, Mass. "Trafo-Sig."

D. T. S.—See Denver Traffic Signal & Mfg. Co.

Day-n-nite—See B. & M. Co.

Day-Nite Auto Signal Co., 510 Van Ness Ave., San Francisco, Cal.

Denver Traffic Signal & Mfg. Co., 1835 Williams St., Denver, Colo. "D. T. S."

Diamond Signal Co., 1207 Van Ness Ave., San Francisco, Cal.

Dolan—See Gartley-Weston Mfg. Co.

Everything is listed under the NOUN or principal word

ANNOUNCEMENT

DEALERS

DISTRIBUTORS

JOBBERS

The new
**"BRADLEY UNIVERSAL
 SIGNAL"**
 is now ready for delivery

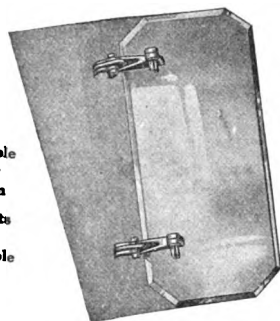
It is a combination REFLECTOR-SIGNAL and PARKING-LIGHT. Fastens on the windshield of any open or closed car—and is finished in highly polished aluminum.

MECHANICALLY operated from small lever at left of steering wheel. Signals — RIGHT — LEFT — STOP! Automatically lights when in any signalling position.

DURABLE—PRACTICAL—ORNAMENTAL

Write for prices, descriptive folder and exclusive sales rights

H. E. BRADLEY CO., Inc.
 720 So. 4th St., Minneapolis, Minn.



Adjustable
to any
Position

All Parts
Inter-
changeable

"Fein" Windeflectors

are in a class by themselves, unsurpassed in quality and attractive appearance and setting the highest standard in side wings that make the front seats a sheltered nook, draughtless, dustless, dry and comfortable.

"Fein" Windeflectors are adapted to any make of car, in stock styles or in any style or shape desired; they are not the cheapest but the best wind deflectors to be had and appeal to the dealer catering to the better class of trade.

They are made of the finest French plate bevel glass, with brass and composition fittings, guaranteed to hold the glass firmly without vibration. Write for style list and prices, etc.

BRIDGEPORT MIRROR MFG. CO.
 520 Water Street Bridgeport, Conn.



\$20⁰⁰

\$20⁰⁰

The Automatic Rear-Warning Device

One size fits all cars

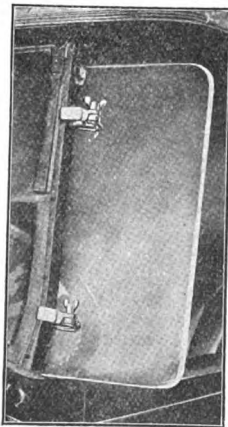
The only absolutely mechanical four-in-one, day and night rear-warning device. Positive in its action—operates independent of electricity. Install on any motor vehicle in 30 minutes. Signals instantly, accurately, constantly. Foot brake says "Stop" automatically; finger-tip says "Right" or "Left" turn. Red bull-eyes and double arrow head combined signals "Caution" at all other times.

Auto Indicator is authorized by law, endorsed by automotive engineers, guaranteed by its manufacturer and is already in use guarding life and property on 35,000 fine American motor cars and trucks. Write for complete details regarding our proposition and discounts to dealers.

THE AUTO INDICATOR COMPANY
 210-218 Ottawa Ave., N. W., Grand Rapids, Michigan

AUTO INDICATOR
 Commands Attention—Demands Safety

Mitchell Auxiliary Windshields



**Fit Every
Car**

**No Holes in
Glass**

**Nothing
Interferes
with
Vision**

**Fittings
Are Made of
Nickel
Bronze**

**Attached in
Ten Minutes**

**Sold complete
with Glass,
or Fittings
Sold
Separately**

ATTRACTIVE SALES PROPOSITION
 Write Us Today

Mitchell Automotive Company
 INC.

157 Christopher Street New York

SIGNALS, Direction Indicating or Traffic (Continued)

Double Safety Signal Co., 192 N. Clark St., Chicago, Ill.
 Du-Plex Signal Co., Jackson, Mich.
 Federal Signal Co., Albany, N. Y. "Neo-Lite," "Red Hand."
 Fla-Ray—See Air-Way Electric Appliance Corp.
 Frow Specialty Co., 145 N. Seventh St., Philadelphia, Pa.
 Fow-Toor—See Toor Products.
 Garl Electric Co., 307 Water St., Akron, O.
 Gartley-Weston Mfg. Co., Real Estate Exchange Bldg., Detroit, Mich. "Dolan."
 General Motor Devices Co., 5235 Ravenswood Ave., Chicago, Ill. "Trank-Gide."
 General Safety Signal Co.—See Green Hand Safety Signal Co.
 George, C. H., 639-41 Main St., Buffalo, N. Y.
 Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich. "Thullen."
 Green Hand—See Green Hand Safety Signal Co.
 Green Hand Safety Signal Co., 47 W. 34th St., New York, N. Y. (Sole Distributors for General Safety Signal Co., Newark, N. J. "Green Hand.")
 Hanke Electric Mfg. Co., 3330 University Ave., S. E., Minneapolis, Minn.
 Hart's Auto Signal Tail Light Co., 7 N. First St., San Jose, Cal.
 I-go Stop Signal Co., 938 E. 152d St., Cleveland, O.
 International Aerial Navigation Co., 1034 N. Vandeventer Ave., St. Louis, Mo. "Kep-pel Bros."
 International Automatic Appliance Co., Mutual Life Bldg., Buffalo, N. Y.
 Keppel Bros.—See International Aerial Navigation Co.
 Kloefer-Springfield Autophore Co., 10 W. High St., Springfield, O.
 Kobzy—See Chicago Die & Specialty Co.
 Lake Erie Accessories Co., 1212-50 W. Sixth St., Cleveland, O. "Simmons."
 Lexington Signal Co., Lexington, Ky.
 Loewus, Edwin H., 304 W. 54th St., New York, N. Y. (Sole Distributors for Bunyan Mfg. Co., Cleveland, O. "Tell-U-When.")
 Lunce & Soule, 622 79th St., Brooklyn, N. Y. "Warno."
 Mark Stop Signal Co., 10800 Quebec Ave., Cleveland, O.
 Melle Mfg. Co., 21st St. & Illinois Ave., East St. Louis, Ill.
 National Auto Signal Co., 1428 Bush St., San Francisco, Cal.
 National Code Signal Co., 2627 Cottage Grove Ave., Chicago, Ill.
 Nelson & Co., L. R., 1715 S. Washington St., Peoria, Ill.
 Neolite—See Federal Signal Co.
 Neverout—See Rose Mfg. Co.
 P. A. T. S. Mfg. Co., Lodi, Cal.
 P. E. D. Corp., 30 Church St., New York, N. Y. "Ped."
 Ped—See P. E. D. Corp.
 Perron Signal Co., Sparta, Wis.
 Pittsburgh Home Supply & Mfg. Co., 108 First St., Jeannette, Pa.
 Progressive Mfg. Co., 511 Wisconsin St., Racine, Wis.
 Protex Signal Co., Park Bldg., Cleveland, O. (See page 903.)
 Rathbun & Fletcher, 1728 S. Michigan Ave., Chicago, Ill. "Atma."
 Red Hand—See Federal Signal Co.

Reliable Auto Safety Signal Co., 1308 Steiner St., San Francisco, Cal.
 Reliance Machine & Specialty Co., 101-03 Green St., Boston, Mass. "Safeguard."
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."
 Rothermich, A. P., 2915 N. Taylor Ave., St. Louis, Mo.
 Ryan Corp., Phoenix, N. Y. "Bates."
 S-R-L—See Union Machine Co.
 Safdicator—See Universal Safety Corp.
 Safeguard—See Reliance Machine & Specialty Co.
 Safety First—See Auto Tail Light Co.
 Signa-Lite—See Auto Safety Signal Co.
 Simmons—See Lake Erie Accessories Co.
 Smith Co., W. J., Hagerstown, Md. "Aro."
 Smith Signal Corp., 53-55 W. 66th St., New York, N. Y.
 Star Light—See Universal Star Light Signal Corp.
 Tell-U—See Begley Mechanical Corp.
 Tell-U-When—See Bunyan Mfg. Co.
 Thullen—See Grand Rapids Brass Co.
 Toor Products, 29 W. 34th St., New York, N. Y. "Fow-Toor."
 Traf-O-Lite—See Automobile Device Co.
 Traf-Sig—See Coward Auto Supply Co.
 Trank-Gide—See General Motor Devices Co.
 Turn-O-Stop Mfg. Corp., 521 W. 23d St., New York, N. Y.
 Two-In-One Signal Lamp Co., Liberty Bldg., New Haven, Conn.
 U. S. A.—See Universal Safety Appliance Corp.
 Union Machine Co., 183 University Ave., St. Paul, Minn. "S-R-L."
 Universal Electric Automobile Signal, 6 Beacon St., Boston, Mass.
 Universal Safety Corp., Decatur, Ill. "Saf-dicator."
 Universal Safety Appliance Corp., 414 E. Livingston Ave., Baltimore, Md. "U. S. A."
 Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.
 Universal Star Light Signal Corp., 718 Atlantic Ave., Brooklyn, N. Y. "Star Light."
 Vacu—See Automobile Appliances Co.
 Wagner Auto Signal Co., 1524 Franklin St., Oakland, Cal.
 Wallace—See Automatic Safety Signal Co.
 Warno—See Lunce & Soule.
 Which-Way Advisor Signal Co., 797 Bailey Ave., Buffalo, N. Y.
 Williams Mfg. Co., 121-125 W. 35th St., Los Angeles, Cal. (See page 525.)
 Worth Accessories Co., 6 Beacon St., Boston, Mass.
 Wright Traffic Signal Co., Cincinnati, O.

SIGNALS, WARNING—See Horns, Exhaust

SIGNALS, Electric

American Sign Co., Kalamazoo, Mich.
 (See page 779.)

SIGNALS, Enameled

Baltimore Enamel & Novelty Co., ft. Allen St., Baltimore, Md.
 Enameled Steel Sign Co., 190 N. State St., Chicago, Ill.
 General Etching & Mfg. Co., 312 S. Hamilton Ave., Chicago, Ill.
 Ing-Rich—See Ingram-Richardson Mfg. Co.
 Ingram-Richardson Mfg. Co., Beaver Falls, Pa. "Ing-Rich."

Everything is listed under the NOUN or principal word



ELECTRIC SIGNS

Your customers have seen many electric signs. Did they see yours? If you have the right kind, the right size, and the right location on your building; yes. If you have a poor one, one too small, badly located on the building, part of the lamps burned out and not replaced, or if you have none at all, quite probably they did not.

Automobile merchandising and garage service needs, and will profit by, an unusual amount of electric advertising. People used to be at home reading the papers in the evening; now they are out driving about and will see your electric sign if you have one.

An "American" electric advertising sign will tell your prospective customer **WHO** you are, **WHERE** you are, and **WHAT** you have to sell all at one and the same time. This three fold impression is not produced by any other form of advertising.

The "American" is made to order (not a stock job) beautiful and attractive by day as well as brilliant, fascinating and convincing by night.

The "American" has no superior in design, construction, durability, and economy.

The "American" is furnished in any of the important types of electric signs; lens letters, outside lamp type letters, opal glass letters, or in art glass faces.

The latest creations in colored illumination with moving effects, possible only through a combination of colored lamps with the colored "American" lenses.

Our flexible oven-baked enamel finish is produced in any desired color or tint, with trimmings in harmonizing colors or gold leaf.

The "American" is built and finished as you want it and not like your competitor's sign—an advertising advantage decidedly beneficial to you.

Buy an "AMERICAN." Write for illustrations, special hand sketch, or any other desired information.

AMERICAN SIGN COMPANY

Main office and factory: Kalamazoo, Mich.

New York sales and export office: 1270 Broadway, New York City.

SIGNS, Enameled (Continued)

Murdock Co., W. James, 116 Opera Pl., Cincinnati, O.
 Shank Sign Co., E. A., 19 Park Row, New York, N. Y.

SIGNS, RADIATOR—See Monograms, Ornamental

SIGNS, Special Road

(Mirrors or reflectors of special design that glow red when the rays from the car headlights strike them—for use as danger signs or signals)

Automatic Signal & Sign Co., 905 Rex Ave., N. E., Canton, O. "Dependable."
 Dependable—See Automatic Signal & Sign Co.

SILENCERS, EXHAUST—See Mufflers

SILENCERS, FENDER, FOR FORDS—See Braces, Mud Guard

SILENCERS, MUD GUARD, FOR FORDS—See Braces, Mud Guard

SILENCERS, Overhead Valve

Frey Sales Co., 418 Beard Ave., Buffalo, N. Y. "J. C. B."

J. C. B.—See Frey Sales Co.

KHK—See Kay Co.

Kay Co., Kay H., 967 Woodward Ave., Detroit, Mich. "KHK."

Lane—See National Equipment Co.

National Equipment Co., Commercial Trust Bldg., Philadelphia, Pa. "Lane."

Newton Mfg. Co., Plainville, Conn. (See page 315.)

Soenksen-Spiers Engineering Co., Aurora, Ill. "Sosco."

Sosco—See Soenksen-Spiers Engineering Co.
 Stewart Mfg. Co., Oakland, Cal. (See page 373.)

Stiles Mfg. Co., St. Louis, Mo. (See page 471.)

Villwock, C. F., Wadena, Minn.

Ware Products Corp., 3916 N. Fifth St., Philadelphia, Pa.

SILENCERS, RADIUS ROD, FOR FORDS—See Anti-Rattlers, Radius Rod

SILENCERS, SPINDLE ARM, FOR FORDS—See Anti-Rattlers, Spindle Arm

SILENCERS, STEERING COLUMN, FOR FORDS—See Braces, Steering Column

SILENCERS, STEERING ROD, FOR FORDS—See Anti-Rattlers, Steering Rod

SILK, Spool

Sauquoit Silk Mfg. Co., Philadelphia, Pa.

SILK, Upholstery

Cheney Bros., South Manchester, Conn.
 Midland Fabrics Co., 228 W. 58th St., New York, N. Y. (Distributors.) (See page 303.)

Monotuck Silk Co., Florence, Mass.

Seaco—See Seamans & Cobb Co.

Seamans & Cobb Co., 140 Essex St., Boston, Mass. "Seaco."

Sauquoit Silk Mfg. Co., Philadelphia, Pa.

Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.

Shirley Corp., 250 W. 54th St., New York, N.Y. "Wearwell."

Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 257.)

Wearwell—See Shirley Corp.

SILLS, WOOD BODY—See Parts, Wood

SILVER, GERMAN—See Brass, Sheet

SINGLE SPARK IGNITION SYSTEMS—See Systems, Battery Ignition

SIREN HORNS—See Horns, Siren

SKID CHAIN APPLIERS—See Tools, Tire Chain Attaching

SKID CHAIN FASTENERS—See Fasteners, Tire Chain

SKIDS, Car Raising

(For facilitating repair work or cleaning—used as a substitute for a pit)

Montour Steel Co., Montour Falls, N. Y.

Portable Auto Trench Co., 2 Depot Yard, Lynn, Mass.

SKIING MACHINES—See Machines, Tire Skiing

SLAT IRONS—See Irons, Slat

SLEEVE PROTECTORS—See Protectors, Sleeve

SLEEVE PULLERS FOR FORDS—See Pullers, Axle Bearing Sleeve

SLEEVES or BANDS, Tire Repair

(For lacing or strapping around a tire to close a puncture or blowout. For Sleeves to be used between inner tube and outer shoe—See Shoes, Inner Tire)

Acme—See Chicago Tire Goods Co.

Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 371.)

American Chain Co., Bridgeport, Conn. "Dobbins." (See page 329.)

Atco—See Autocrat Tire Co.

Atlas Rubber Co., 326 W. Grand Ave., Chicago, Ill.

Auto Boot Mfg. Co., Hutton Bldg., Spokane, Wash. "Porcupine."

Auto Tire Boat Co., 1210 Webster Ave., Chicago, Ill.

Autocrat Tire Co., Main & F Sts., Middlethian, Tex. "Atco."

Badger Handle Co., 415-19 Third St., Milwaukee, Wis.

Big J.—See Jefferson Rubber Co.

Broughton Co., George H., 256 Main St., Buffalo, N. Y.

Bull Dog—See Polson Rubber Co.

Chicago Raw Hide Mfg. Co., 1301 Elston Ave., Chicago, Ill. "Krome."

Chicago Tire Goods Co., 1216 Webster Ave., Chicago, Ill. "Acme."

Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."

Corker—See General Tire & Rubber Co.

Corona—See Voorhees Rubber Mfg. Co.

Dobbins—See American Chain Co.

Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind. "Rival."

Durable—See Gates Rubber Co.

Everything is listed under the NOUN or principal word

SLEEVES or BANDS, Tire Repair
(Continued)

Eastern Tire & Rubber Co., 78 W. Second St.
(So. Boston), Boston, Mass.
Eno Rubber Co., 1026 S. Los Angeles St., Los
Angeles, Cal.
Essex Rubber Co., May & Beakes Sts., Tren-
ton, N. J.
Evans-Lawrie Co., 782 Commonwealth
Ave., Boston, Mass. (Eastern Distribu-
tors for "G. & K." Sleeves.)
(See page 113.)
Falls Rubber Co., Cuyahoga Falls, O.
Federal Rubber Co. (Cudahy), Milwaukee,
Wis.
Firestone Tire & Rubber Co., Miller & Sweit-
zer Aves., Akron, O.
First National Tire & Reinner Co., 55
Compan Ave., N. W., Grand Rapids,
Mich. (See page 775.)
Fisher Mfg. Co., 735 O St., Lincoln, Neb.
G. & K.—See Graton & Knight Mfg. Co.
Gates Rubber Co., Broadway & Tennessee
Sts., Denver, Colo. "Durable."
General Tire & Rubber Co., E. Market St.,
Akron, O. "Corker."
Goodrich Co., B. F. S. Main St., Akron, O.
Goodyear Tire & Rubber Co., Akron, O.
Graton & Knight Mfg. Co., Worcester,
Mass. "G. & K." (See page 113.)
Indiana Rubber & Insulated Wire Co., Jones-
boro, Ind.
Inner Shoe Tire Co., Oakes & Ellsworth Sts.,
Grand Rapids, Mich.
Jefferson Rubber Co., Jefferson, Wis. "Big J."
Keystone Rubber Mfg. Co., 135 E. 11th St.,
Erie, Pa.
Kimball Tire Case Co., 168 Broadway, Council
Bluffs, Ia.
Krome—See Chicago Rawhide Mfg. Co.
Lafayette Tire Co., 511-13 N. Ninth St.,
Lafayette, Ind.
Lee Tire & Rubber Co., 245 W. 55th St., New
York, N. Y.
Legnard Co., A. B., Waukegan, Ill.
Michelin Tire Co., Milltown, N. J.
Miller, Chas. E., 1490 S. Meridian St., Ander-
son, Ind.
National—See Stephens Rubber Co.
National Leather Belt Co., 342 E. 38th St.,
New York, N. Y.
O'Neil—See Amazon Rubber Co.
Pennsylvania Rubber Co. of America, Jean-
nette, Pa.
Polson Rubber Co., 1657 Doan Ave., Cleveland,
O. "Bull Dog."
Porcupine—See Auto Boot Mfg. Co.
Racine Rubber Co., Racine, Wis.
(See page 867.)
Rival—See Double Fabric Tire Co.
Rugg & Co., E. L. Newark, O.
Sioux City Tire & Mfg. Co., Fifth & Plymouth
Sts., Sioux City, Iowa.
Stephens Rubber Co., A. J., 1427 Chestnut St.,
Kansas City, Mo. "National," "Superior."
Sturges Tire & Rubber Co., Oakland, Cal.
Twentieth Century Tire Protector Co., Mid-
dletown, Tex.
United States Tire Co., 1790 Broadway,
New York, N. Y. (See page 863.)
Vitalto—See Continental Rubber Works.
Voorhees Rubber Mfg. Co., 20-56 Bostwick
Ave., Jersey City, N. J. "Corona."
Wearwell Rubber Co., Kokomo, Ind.
White Mule, Inc., 211 S. Illinois Ave., Car-
bondale, Ill.
Woodworth Mfg. Co., 1-29 Starr Ave., Bing-
hamton, N. Y.

SNAP HOOKS—See Hooks, Snap

SNAP LOOPS—See Loops, Brass Snap

SOAPS, Automobile(See also *Polishes, Automobile*)

Amalie—See Sonnenborn Sons.
Amberso—See Columbia Refining Co.
American Crown—See Kirk & Co.
American Soap & Washoline Co., 140-80 Cen-
tral Ave., Cohoes, N. Y. "Apollo."
American Textile Soap Co., 56 Walker St.,
Springfield, Mass. "Fisk."
Apollo—See American Soap & Washoline Co.
Armor Oil & Chemical Co., Reserve Bank
Bldg., Kansas City, Mo. "Wonder Cleaner."
Armour Soap Works, 81st Pl. & Beuson St.,
Chicago, Ill. "Lustro."
Arnold, N. B., 1 Sigourney St., Brooklyn,
N. Y. "Silkup."
Arnstein, Eugene, 45 W. 36th St., Chicago, Ill.
"Century."
Auto King—See National Soap Co.
Balkan—See Jones & Bro.
Baum's Castorine Co., 104 N. George St.,
Rome, N. Y.
Blue Ribbon—See International Metal Polish
Co.
Boston Blacking Co., Third & Potter Sts.,
Cambridge, Mass. "Red Fox."
Buckeye—See Davis-Young Soap Co.
Butler-Harley Co., 33rd & Master Sts., Phila-
delphia, Pa. "Harco."
Camden Chemical Mfg. Co., 18th & Mickie
Sts., Camden, N. J. "Greyhound."
Century—See Arnstein, Eugene.
Claire Mfg. Co., 719 W. 63d St., Chicago, Ill.
"Jinx."
Cleaneasy—See Winn, Wm. R.
Clenso—See Puritan Oil & Paint Co.
Columbia Refining Co., 90 West St., New York,
N. Y. "Amberso."
Damascus Mfg. Co., 9501 Cassius Ave., Clevel-
and, O.
Davies-Young Soap Co., Findlay St. & Big
Four R. R., Dayton, O. "Buckeye."
Detroit White Lead Works, 1960 Milwaukee
Ave., E., Detroit, Mich.
Duplex—See Enterprise Oil Co.
Durkee-Atwood Co., 40 Wilder St., Minne-
apolis, Minn. "Rie-Nie."
E-Fec-Tiv—See Permatite Mfg. Co.
Enterprise Oil Co., 164 Chandler St., Buffalo,
N. Y. "Duplex."
Esner Mfg. Co., 100 Glendale Ave., Peoria, Ill.
"Soo-Off-E-Z."
Excelsior—See Mills Oil Co.
Fairchild & Bro., M. H., 6 W. Austin Ave.,
Chicago, Ill.
Famaco—See Mears Chemical Co.
Fisk—See American Textile Soap Co.
Flash Chemical Co., 180-70 Second St., Cam-
bridge, Mass.
Frierich & Mansell, 74 Grand St., New York,
N. Y.
G. W.—See Great Western Oil Co.
Globe Soap Co., Cincinnati, O.
Glossene—See Lautz Bros. & Co.
Good, James, 929-41 N. Front St., Phila-
delphia, Pa.
Great Western Oil Co., 2355 E. 27th St., Clevel-
and, O. "G. W."

Everything is listed under the NOUN or principal word

SOAPS, Automobile (Continued)

- Green Oil Soap Co., 166-72 N. Curtis St., Chicago, Ill. "Simplex."
- Greyhound—See Camden Chemical Mfg. Co.
- Hachmeister-Lind Chemical Co., 2332 Forbes St., Pittsburgh, Pa. "Hallico."
- Hallico—See Hachmeister-Lind Chemical Co.
- Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 665.)
- Harco—See Butler-Harley Co.
- Harrai Soap Co., 122-26 Havemeyer St., Brooklyn, N. Y. "Kleeneasy."
- Harris Oil Co., A. W., Providence, R. I. (See page 433.)
- Heaney Mfg. Co., 10-12 India Sq., Boston, Mass. "Lion."
- Hollingshead Co., R. M., 113 N. Ninth St., Camden, N. J. "Whisloil."
- Houghton & Co., E. F., 240 W. Somerset St., Philadelphia, Pa.
- Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. "Roma."
- International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."
- Interstate Chemical Co., 667 Garfield Ave., Jersey City, N. J.
- Invincible—See Millers Sons Co.
- Jesco—See Wilson-Martin Co.
- Jewel Mfg. Co., 403-07 E. Shiawassee St., Lansing, Mich.
- Jewel—See Wadsworth-Howland Co.
- Jewel Mfg. Co., Lansing, Mich.
- Jinx—See Claire Mfg. Co.
- Jones & Bro., J., 429 Locust St., Philadelphia, Pa. "Balkan."
- Kennedy Mfg. Corp., 360 Dorchester Ave., Boston, Mass.
- Kirk & Co., James S., 1232 W. North Ave., Chicago, Ill. "American Crown."
- Kleeneasy—See Harrai Soap Co.
- Kleno Mfg. Co., North Weymouth, Mass.
- Klenz—See Symonds Co.
- La-Lo Chemical Co., Hay & Friendship Sts., Providence, R. I.
- Layton Park Oil & Soap Co., M. & M. Bank Bldg., Milwaukee, Wis.
- Lautz Bros. & Co., 44 Hanover St., Buffalo, N. Y. "Glossene."
- Liberty Bell Oil Co., 600 S. Vandeventer Ave., St. Louis, Mo.
- Liberty Chemical Works, 352 E. Illinois St., Chicago, Ill. (See page 783.)
- Lin-O—See Strunz & Son.
- Lin-Oil-Jel—See National Soap Co.
- Lins Mfg. Co., W. R. (Roxborough), Philadelphia, Pa. "Linsco."
- Linsco—See Lins Mfg. Co.
- Lion—See Heaney Mfg. Co.
- Long Island Soap Co., Meeker Ave. & Bridgewater St., Brooklyn, N. Y. "Rex." (See page 783.)
- Loos & Dilworth, 134 S. Front St., Philadelphia, Pa.
- Lustro—See Armour Soap Works.
- McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
- Magio—See Zurn Co.
- Martin-Senour Co., 2510 Quarry St., Chicago, Ill.
- Mears Chemical Co., Frank A., 63 Biltmore Ave., Asheville, N. C. "Famco."
- Middle States Oil Co., Engineers Bldg., Cleveland, O.
- Millers Sons Co., A. D., Columbus & Preble Aves., Pittsburgh, Pa. "Perfection."
- Mills Oil Co., C. E., So. West St., Syracuse, N. Y. "Excelsior."
- Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
- Mobo—See Stanley Co.
- Monogram—See New York Lubricating Oil Co.
- Munger Products Co., 220 Fifth Ave., New York, N. Y. "Wundrmo."
- Murphy—See Phoenix Oil Co.
- Napco—See National Oil Products Co.
- National Oil Products Co., 15 Bergen St., Harrison, N. J. "Napco."
- National Oil & Supply Co., 180 Frelinghuysen Ave., Newark, N. J. "Viscos."
- National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Pioneer."
- National Soap Co., 1910 Franklin St., Detroit, Mich. "Auto King," "Lin-Oil-Jel."
- New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
- O'Neill Oil & Paint Co., 297-303 E. Water St., Milwaukee, Wis. "Velvet."
- Oil City Oil & Grease Co., Seneca St., Oil City, Pa.
- Panhard Oil Corp., 395 Broadway, New York, N. Y.
- Parker Refining Co., 1307 W. 11th St., Cleveland, O.
- Parker Rishor Mfg. Co., 841 Maple St., Rochester, N. Y. "Parko."
- Parko—See Parker Rishor Mfg. Co.
- Peerless Mineral Products Co., 71 Jamaica Ave., Brooklyn, N. Y.
- Perfection—See Millers Sons Co.
- Perfection—See Warren Refining & Chemical Co.
- Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fee-Tiv."
- Phoenix Oil Co., 2554 W. Fifth St., Cleveland, O. "Murphys."
- Pioneer—See National Rubber & Specialties Co.
- Powero—See Tide Water Oil Sales Corp.
- Puritan Oil & Paint Co., 1213 W. 10th St., Cleveland, O. "Clenzo."
- Puritan Soap Co., 500 Exchange St., Rochester, N. Y.
- Red "C" Oil Mfg. Co., Keyser Bldg., Baltimore, Md. "Speedway."
- Red Fox—See Boston Blacking Co.
- Rex—See Long Island Soap Co.
- Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis.
- Rie-Nie—See Durkee-Atwood Co.
- Robertson Products Co., Theo. B., 700-04 W. Division St., Chicago, Ill. "T. B. R."
- Rome—See Howard Lubricants Co.
- Sanozone Chemical Co., 5 N. 20th St., Philadelphia, Pa.
- Simplex—See Green Oil Soap Co.
- Skat Co., 791 Park St., Hartford, Conn.
- Slakup—See Arnold, N. B.
- Snow Flake Axle Grease Co., 123 Oliver St., Fitchburg, Mass.
- Sonneborn Sons, L., 262 Pearl St., New York, N. Y. "Amalie."
- Soo-Off-E-Z—See Esner Mfg. Co.
- Spear's Sons Co., Aiden, 140 Sixth St., Boston, Mass.
- Speedway—See Red "C" Oil Mfg. Co.
- Stanley Co., John T., 30th St. & North River, New York, N. Y. "Mobo." (See page 783.)
- Strunz & Son, S., 708 Bingham St., Pittsburgh, Pa. "Lin-O."
- Sullivan Oil Co., 413 N. Wells St., Chicago, Ill. Superior—See Durkee-Atwood Co.

Everything is listed under the NOUN or principal word

LIBERTY CHEMICAL WORKS

Manufacturers of High Grade Chemical Specialties

CHICAGO,

ILLINOIS

Auto Soap
Liquid Soap
Hand Soap
Green Soap
Tire Talc

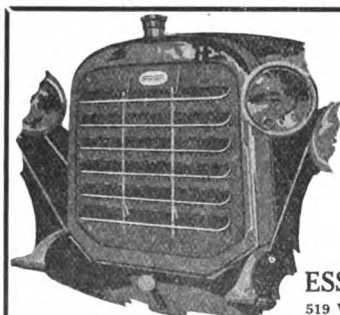
Cup Grease
Fibre Grease
Graphite Grease
Gear Grease
600 Trans. Oil



Fire Killer
Lightning Cleaner
Metal Polish
Body Polish
Gasket-Lack
Top Dressing
Fender Enamel
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Brooklyn, N. Y.

Please mention The Automobile Trade Directory

SOAPS, Automobile (Continued)

Symonds Co., Joseph H., Westfield, Mass.
"Klenz."
T. B. R.—See Robertson Products Co.
Texaco—See Texas Co.
Texas Co., 17 Battery Place, New York, N. Y.
"Texaco."
Tide Water Oil Sales Corp., 11 Broadway,
 New York, N. Y. "Powero."
Truxo—See Wilson-Martin Co.
Velvet—See O'Neill Oil & Paint Co.
Visco Motor Oil Co., 2104 Superior Ave., N. W.,
 Cleveland, O.
Viscos—See National Oil & Supply Co.
Wadsworth-Howland Co., 219 N. Carpenter
 St., Chicago, Ill. "Jewel."
Walter & Co., W. A., 428 W. Conway St.,
 Baltimore, Md.
Warren Refining & Chemical Co., Cleveland,
 O. "Perfection."
Washzum—See White & Bagley Co.
White & Bagley Co., Worcester, Mass.
"Washrum." (See page 607.)
Whizoll—See Hollingshead Co.
Wilson-Martin Co., Camden, N. J. "Jesco,"
 "Truxo."
Winn, Wm. R., 143 Malden Lane, New York,
 N. Y. "Cleaneasy."
Wonder Cleaner—See Armor Oil & Chemical
 Co.
Wonder Worker—See Hall-Thompson Co.
Wundrmo—See Munger Products Co.
Zurn Co., O. F., 2734-38 N. Broad St., Phila-
 delphia, Pa. "Magic."

SOAPS and PASTES, Hand

A-1 Mfg. Co., Front & Wharton Sts., Phila-
 delphia, Pa.
Adacol Laboratories, Providence, R. I.
American Sales Co., 1654-57 Monadnock Bldg.,
 Chicago, Ill. (Sole Distributors for M. & S.
 Chemical Co., Chicago, Ill.)
American Soap and Washoline Co., 140-80 Cen-
 tral Ave., Cohoes, N. Y. "Graham," "S.
 & H."
Armour Soap Works, 1555 W. 31st Pl., Chi-
 cago, Ill. "M & M," "Pumex."
Arnold, N. B., 1 Sigourney St., Brooklyn,
 N. Y. "Silkup."
Atwell Mfg. Co., 325 N. Main St., Independ-
 ence, Mo.
Bang—See United States Soap Co.,
Baum's Castorine Co., 104 N. George St.,
 Rome, N. Y.
Bear Cat Products Co., Capitol Hill Sta.,
 Oklahoma City, Okla.
Blue Ribbon—See International Metal Polish
 Co.
Boston Blacking Co., Third & Potter Sts.,
 Cambridge, Mass. "O-So-Easy," "Sapo."
Bright Star Sales Corp., 221 N. Camac St.,
 Philadelphia, Pa.
Bristol Mfg. Co., 106 Friend St., Boston,
 Mass. "Jumbo."
Champion—See Gardner & Co.
Chaufeur—See Decatur Union Chemical Co.
Chief Products Co., 2335 Michigan Ave., Chi-
 cago, Ill.
Claire Mfg. Co., 719 W. 63d St., Chicago, Ill.
"Jinx"
Cleaneasy—See Winn, Wm. R.
Cleano—See Durkee-Atwood Co.
Cleanzum—See White & Bagley Co.
Colgate & Co., 199 Fulton St., New York,
 N. Y.
Corliss Supply & Mfg. Co., 1906 Olive St.,
 St. Louis, Mo.

Cudahy Packing Co., 111 W. Monroe St., Chi-
 cago, Ill. "Goblin."
Davies-Young Soap Co., Findlay St. & Big
 Four R.R., Dayton, O. "Whiz."
Decatur Union Chemical Co., 636 E. Wood
 St., Decatur, Ill. "Chaufeur."
Drury Chemical Products Co., 71 W. Eagle
 St., Buffalo, N. Y. "Kemico Wonder."
Durkee-Atwood Co., 40 Wilder St., Minne-
 apolis, Minn. "Rie-Nie," "Cleano."
E-Fec-Tiv—See Permatite Mfg. Co.
E-Ze Products Co., 3 E. 14th St., New York,
 N. Y.
Ericka Mfg. Co., 332 Liberty St., Springfield,
 Mass. "Itsafine."
Ferret—See Symonds Co.
Fietling Chemical Co., 233-40 Reed St., Mil-
 waukee, Wis. "Presto."
Flash Chemical Co., 160-70 Second St., Cam-
 bridge, Mass.
Fougera & Co., E., 90-92 Beekman St., New
 York, N. Y. "Fyno."
Frisko Mfg. Co., Kansas City, Mo.
Fyno—See Fougera & Co.
Gardner & Co., 222 E. 34th St., New York,
 N. Y. "Champion."
Garnet Co., Geo. H., 918 Greenleaf St., Allen-
 town, Pa. "Meckano."
Gastine Co., Bridgeton, N. J.
Glt Mfg. Co., 92 Franklin St., Westfield, Mass.
Go-Co Compound Co., 206 E. 67th St., New
 York, N. Y.
Goblin—See Cudahy Packing Co.
Graham—See American Soap & Washoline Co.
Gre-Solvent—See Utility Co.
Green Oil Soap Co., 166-72 N. Curtis St., Chi-
 cago, Ill.
Grim-Off—See Pitts Sanitary Co.
Grime-Off—See Pacific Coast Borax Co.
Hall-Thompson Co., Dept. A., Hartford,
 Conn. "Wonder Worker."
 (See page 655.)
Hand-l-Wash—See Tay-Miller Mfg. Co.
Heaney Mfg. Co., 10-13 India Sq., Boston,
 Mass. "Revivo."
Hollingshead Co., R. M., 113 N. Ninth St.,
 Camden, N. J. "Krystal Solloff."
I. C. U.—See Livingston Co.
Imp—See Rath Mfg. Co.
Instant Products Co., 21 Cambria St., Boston,
 Mass.
International Metal Polish Co., Quill St. &
 Belt, R. R., Indianapolis, Ind. "Blue Rib-
 bon."
Itsafine—See Ericka Mfg. Co.
J. M. Pease—See Kimco Mfg. Co.
Jewel—See Wadsworth-Howland Co.
Jinx—See Claire Mfg. Co.
Jumbo—See Bristol Mfg. Co.
Kemico Wonder—See Drury Chemical Products
 Co.
Kemoshyne Products, Copewood & Davis Sts.,
 Camden, N. J.
Kimco Mfg. Co., 2665 Main St., Buffalo, N. Y.
 "J. M. Pease."
Kleno Mfg. Co., North Weymouth, Mass.
Krystal Solloff—See Hollingshead Co.
Kwix Co., 155 N. Washington St., Boston,
 Mass.
La-Lo Chemical Co., Hay & Friendship Sts.,
 Providence, R. I.
Lautz Bros. & Co., 44 Hanover St., Buffalo,
 N. Y.
Lava—See Walthe & Co.
Liberty Chemical Works, Chicago, Ill.
 (See page 783.)

Everything is listed under the NOUN or principal word

SOAPS and PASTES, Hand (Continued)

Livingston Co., 161 Day St., New Haven, Conn.
 "I. C. U."
 Lowe Mfg. Co., J. H., Auburn Rd., Seneca Falls, N. Y. "Owl."
 M & M—See Armour Soap Works.
 M. & S. Chemical Co.—See American Sales Co.
 Meckano—See Garnet Co.
 Mid-Earth Mfg. Co., 2166 W. 53d St., Cleveland, O.
 Mione Mfg. Co., Collingsdale, Pa.
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley Sts., Long Island City, N. Y.
 Mobo—See Stanley Co.
 Monahan Antiseptic Co., 166-72 N. Curtis St., Chicago, Ill.
 Monogram—See New York Lubricating Oil Co.
 Moon-Shine Mfg. Co., Kansas City, Mo. (See page 267.)
 Munger Products Co., 220 Fifth Ave., New York, N. Y. "Wundrmek."
 New York Lubricating Oil Co., 116 Broad St., New York, N. Y. "Monogram."
 Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)
 Nowater Cleanser Co., Warren, Pa.
 Norwesco—See Northwestern Chemical Co.
 NuLife Auto-Aid Corp., 71 Asylum St., Hartford, Conn.
 O-So-Easy—See Boston Blacking Co.
 O-So—See Rand & Byam.
 Owl—See Lowe Mfg. Co.
 Pacific Coast Borax Co., 199 William St., New York, N. Y. "Grime-Off."
 Parker Rishor Mfg. Co., 841 Maple St., Rochester, N. Y. "Parko."
 Parko—See Parker Rishor Mfg. Co.
 Peerless Mineral Products Co., 71 Jamaica Ave., Brooklyn, N. Y.
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fee-Tiv."
 Pex Products Co., Buffalo, N. Y.
 Pierce Products Co., Buffalo, N. Y. "Water-Less."
 Pitts, Sanitary Co., Newport, R. I. "Grim-off."
 Presto—See Felbing Chemical Co.
 Pumex—See Armour Soap Works.
 Radium Compound Co., Phoenix, N. Y.
 Rand & Byam, Charlestown, Mass. "O-So."
 Rath Mfg. Co., Hedley & Richmond Sts., Philadelphia, Pa. "Imp."
 Revivo—See Heaney Mfg. Co.
 Rexine Co., Pennsylvania & River Sts., Sheboygan, Wis.
 Rie-Nie—See Durkee-Atwood Co.
 S. & H.—See American Soap & Washoline Co.
 Sapo—See Boston Blacking Co.
 Shofo—See Stanley Co.
 Skat Co., 791 Park St., Hartford, Conn.
 Skidoo—See Yeasell-Goldstein Corp.
 Slikup—See Arnold, N. B.
 Solly Co., C. B., Draxel Bldg., Philadelphia, Pa.
 Spee-Dee—See States Chemical Co.
 Stanley Co., John T., 30th St. & North River, New York, N. Y. "Shofo," "Mobo." (See page 783.)
 States Chemical Co., 697 W. Austin Ave., Chicago, Ill. "Spee-Dee."
 Sterno Corp., New York, N. Y. (See page 269.)
 Symonds Co., Joseph H., Westfield, Mass. "Ferret."

Tatlock Bros., 183 Tremont St., Rochester, N. Y. "Tat's."
 Tat's—See Tatlock Bros.
 Tay-Miller Mfg. Co., 20th & Market Sts., Philadelphia, Pa. "Hand-I-Wash."
 Teeaness Products Co., Nyack, N. Y.
 Trosien, Charles G., 108 Franklin Blvd., Pontiac, Mich.
 United States Soap Co., Blue Rock & B. & O. Ry., Cincinnati, O. "Bang."
 Uno Mfg. Co., 6423 Ravenswood Ave., Chicago, Ill.
 Utility Co., 686 W. 44th St., New York, N. Y. "Gre-Solvent."
 Usun Products Co., 74 Grand St., New York, N. Y.
 Vanco Co., 103 Park Ave., New York, N. Y.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."
 Walke & Co., Wm. E., Grand Ave. & Second St., St. Louis, Mo. "Lava."
 Water-Less—See Pierce Products Co.
 Wenzelmann Mfg. Co., Galesburg, Ill.
 White & Bagley Co., Worcester, Mass. "Cleanzum." (See page 607.)
 Whiz—See Davies-Young Soap Co.
 Winn, Wm. R., 143 Maiden Lane, New York, N. Y. "Cleaneasy."
 Wonder Worker—See Hall-Thompson Co.
 Wundrmek—See Munger Products Co.
 Yeasell-Goldstein Corp., 489 Buttrick Ave., Columbus, O. "Skidoo."

SOAPSTONE, TIRE—See Talc, Tire

SOCIETIES—See Associations and Societies

SOCKET WRENCHES FOR FORDS—See Wrenches, Special

SOCKETS, ANTI-RATTLING BALL, FOR FORDS—See Anti-Rattlers, Radius Rod; also Anti-Rattlers, Steering Rod

SOCKETS, Bow

(For Slat Irons—See Irons, Slat)

American Forging & Socket Co., Pontiac, Mich. (See page 387.)
 Ashtabula Bow Socket Co., 99-101 Prospect St., Ashtabula, O.
 Bonney Forge & Tool Works, Allentown, Pa.
 Brewer Tichener Corp., Cortland, N. Y. "Pioneer," "Cortland."
 Cortland—See Brewer Tichener Corp.
 Defco—See Detroit Forging Co.
 Defco—See Scherer & Co.
 Desoco—See Detroit Socket Co.
 Detroit Forging Co., 284 Mt. Elliott Ave., Detroit, Mich. "Defco."
 Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
 Mascot—See Detroit Forging Co.
 Pioneer—See Brewer Tichener Corp.
 Scherer & Co., H., 440 Jefferson Ave., E., Detroit, Mich. "Defco."
 Scott Co., Geo. W., 1831 E. 55th St., Cleveland, O.
 Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (See page 893.)
 Standard Equipment Co., Lorain Ave. & W. 100th St., Cleveland, O.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributors.) (See page 81.)

Everything is listed under the NOUN or principal word

SOCKETS, Electric Lamp

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill. (See page 289.)
 Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 289.)
 Amco—See Aid Mfg. Co.
 Chicago Electric Mfg. Co., 2801-19 S. Halsted St., Chicago, Ill. "Handy."
 Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
 Douglas & Rudd Mfg. Co., Bronson, Mich.
 Handy—See Chicago Electric Mfg. Co.
 Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.
 Loewus, Edwin H., 304 W. 54th St., New York, N. Y.
 Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)
 Millwood-Brackett Co., Des Moines, Ia. (See page 327.)
 Morse, Frank W., 289 Congress St., Boston, Mass. (See page 221.)
 Motor Specialties Co., Beaver St., Waltham, Mass.
 Parker-Wood Mfg. Co., 100 Purchase St., Boston, Mass.
 Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass. (See page 809.)
 Presto—See Metal Specialties Mfg. Co.
 Rawson Co., Frank C., 54-56 Willow St., Lynn, Mass.
 Rosco—See Rosen & Co.
 Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)
 Smith Mfg. Co., F. A., Rochester, N. Y. (See page 291.)
 Whitman, B. J., 141 Franklin St., Boston, Mass.

SOCKETS, LAMP—See **Sockets, Electric Lamp**

SOCKETS, STAKE—See **Pockets, Truck Stake**

SOCKETS, TOP—See **Sockets, Bow**

SOFT METAL HAMMERS—See **Hammers, Soft Metal**

SOFT RUBBER TUBING—See **Tubing, Soft Rubber**

SOLDER, Aluminum

A & S—See Arrossmith & Sarchet.
 Acme—See Universal Fluxine Co.
 Albertus & Co., F. A., 206 Ninth St., Milwaukee, Wis. "F. A. A."
 Allen Co., L. B., 4548 N. Lincoln St., Chicago, Ill. "Alumini-Soder."
 Alum-Soder—See Allen Co.
 Aluminum Brasing Solder Co., Montgomery Bldg., Chester, Pa. "Peters."
 Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Alumoflux—See Harner Mfg. Co.
 Alumunite Mfg. Co., 427 Fourth Ave., New York, N. Y.
 Alunalux Co., E. Shelby St., Sidney, O.
 American Mirete Corp., 106 W. 52d St., New York, N. Y.
 Arrossmith & Sarchet, Clinton, Ind. "A & S."
 Arrow—See Lester Co.
 Austin & Co., M. B., 706 W. Jackson Blvd., Chicago, Ill. "Mincer's."
 Berry & Co., L. H., 2409 Lyndale Ave., S., Minneapolis, Minn.

City Brass Foundry Co., 5318 St. Clair Ave., N. E., Cleveland, O.
 Crown Aluminum Solder Co., 333 E. 134th St., New York, N. Y.
 Delaware Brass & Aluminum Co., 20th & Walnut Sts., Muncie, Ind.
 Eagle Smelting & Refining Works, Trenton, N. J.
 Electric Smelting & Aluminum Co., 555 W. Jackson St., Lockport, N. Y.
 Ever-Stay Metal Co.—See Ever-Stay Sales Co.
 Ever-Stay Sales Co., 1501 Jackson St., Omaha, Neb. (Sole Distributors for Ever-Stay Metal Co., Omaha, Neb. "Sod-Loom.") (See page 453.)
 F. A. A.—See Albertus & Co.
 Federal Mfg. Co., 27 Haymarket Sq., Boston, Mass. "Supreme."
 Gardiner & Co., G., 7405 Superior Ave., Cleveland, O.
 Harahamer—See Nacol Solder Mfg. Co.
 Harner Mfg. Co., E. C., 143 Pipestone St., Benton Harbor, Mich. "Alumoflux."
 Hayman & Co., Michael, 856 E. Ferry St., Buffalo, N. Y.
 Hercules Mfg. Co., 105 W. 40th St., New York, N. Y. (See page 787.)
 Howard Metal Co., Second & Canal Sts., Reading, Pa.
 Ideal Bronze Co., 1205-69 E. 55th St., Cleveland, O. (See page 201.)
 Ideal Metal Co., 1212 W. Liberty St., Cincinnati, O.
 Illinois Smelting & Refining Co., 410 N. Peoria St., Chicago, Ill.
 Jacobson & Sons Co., I. M., 920-28 Catherine St., Detroit, Mich. "Motex."
 Janney-Steinmets & Co., Philadelphia, Pa. (See page 845.)
 Langsenkamp, F. H., 130-42 Shelby St., Indianapolis, Ind.
 Lenk Mfg. Co., 34-36 Portland St., Boston, Mass.
 Lester Co., Fayetteville, N. Y. "Arrow."
 Lewis & Bros. Co., John T., 437 Chestnut St., Philadelphia, Pa.
 MacKenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "Silverine."
 Metals Mfg. & Alloys Co., 1227 Prospect Ave., Cleveland, O.
 Michigan Smelting & Refining Co., 7885 Jos. Campau Ave., Detroit, Mich.
 Mincer's—See Austin & Co.
 More-Jones Brass & Metal Co., 8132-34 N. Broadway, St. Louis, Mo.
 Motex—See Jacobson & Sons Co.
 Nacol Solder Mfg. Co., Wm. S., Second St., Eunice, La. "Harahamer."
 National Products Co., Kokomo, Ind.
 National Weldene Co., Transportation Bldg., Chicago, Ill.
 Nauty, James, 2634 N. 11th St., Philadelphia, Pa.
 Peters, Inc., Widener Bldg., Philadelphia, Pa. (See page 695.)
 Pittsburgh White Metal Co., 3116 Penn Ave., Pittsburgh, Pa. "Rinehart."
 Richards & Co., 300-06 Causeway St., Boston, Mass. "Rico."
 Rico—See Richards & Co.
 Rinehart—See Pittsburgh White Metal Co.
 Sasco—See Smith Aluminum Solder Mfg. Co.
 Seaboard Metal Corp., 221 Randolph Ave., Jersey City, N. J.
 Semper Idem—See Wildes Son.
 Silverine—See MacKenzie-Waterhouse Co.
 Smith Aluminum Solder Mfg. Co., 1425 N. Felton St., Philadelphia, Pa. "Sasco."
 So-Luminum Mfg. & Engineering Co., 1834 Broadway, New York, N. Y.
 Sod-Loom—See Ever-Stay Sales Co.
 Sterling Aluminum Solder Co., 501 Eleventh St., Brooklyn, N. Y.

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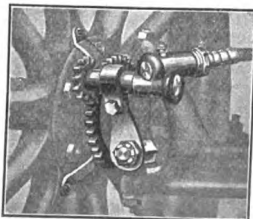
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SOLDER, Aluminum (Continued)

Supreme—See Federal Mfg. Co.
 Thwing, C. B., 445 N. Fifth St., Philadelphia, Pa.
 Twentieth Century Co., 1023 Holmes St., Lansing, Mich.
 U. S. A.—See United Smelting & Aluminum Co.
 United Smelting & Aluminum Co., New Haven, Conn. "U. S. A."
 Universal Fluxine Co., 604 S. Main St., Urbana, O. "Acme."
 Victory Aluminum Solder Co., 1440 S. Michigan Ave., Chicago, Ill.
 Wensley Metal Products Co., 18th & Blake Sts., Denver, Colo.
 Western Kelli-Metal Corp., 721 Grant St., Denver, Colo.
 Wildes Son, Thomas, 339 Fifth Ave., New York, N. Y. "Semper Idem."

SOLDER, Bar and Wire

Birkenstein & Sons, S., 1032 W. North Ave., Chicago, Ill. (See page 591.)
 Blatchford Co., E. W., 230 N. Clinton Ave., Chicago, Ill.
 Chicago Solder Co., 4201 Wrightwood Ave., Chicago, Ill. "Kester."
 (See page 787.)
 Columbia Smelting & Refining Works, Brooklyn, N. Y.
 Dutch Boy—See National Lead Co.
 Emetco—See Empire Metal Co.
 Empire Metal Co., 320 E. Water St., Syracuse, N. Y. "Emetco."
 4-A Products Co., 3103 Downing St., Denver, Colo. "Mendall."
 Gardiner Metal Co., 1368 W. Lake St., Chicago, Ill.
 Henning & Sons, V., 330 Belmont Ave., Brooklyn, N. Y.
 Hoyt Metal Co., 300 N. Broadway, St. Louis, Mo. (See page 102.)
 Kahn Bros., 785-97 Humboldt St., Brooklyn, N. Y. "Victory."
 Kester—See Chicago Solder Co.
 Lehman Bros., Fourth & Jefferson Sts., Hoboken, N. J.
 Lissberger & Son, Marks, 231 Borden Ave., Long Island City, N. Y.
 MacKenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "Silverline."
 Mendall—See 4-A Products Co.
 Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa.
 Metals Mfg. & Alloys Co., 1227 Prospect Ave., Cleveland, O.
 Michigan Smelting & Refining Co., 7835 Jos. Campau Ave., Detroit, Mich.
 More-Jones Brass & Metal Co., 3132-44 N. Broadway, St. Louis, Mo.
 National Lead Co., 111 Broadway, New York, N. Y. "Dutch Boy."
 (See page 207.)
 North American Smelting Co., 900 W. Thompson St., Philadelphia, Pa.
 Pittsburgh White Metal Co., 3116 Penn Ave., Pittsburgh, Pa. "Rinehart."
 Richards & Co., 200-06 Causeway St., Boston, Mass.
 Rinehart—See Pittsburgh White Metal Co.
 Semper Idem—See Wildes Son.
 Silverline—See MacKenzie-Waterhouse Co.
 Taylor Co., N. & G., 308 Chestnut St., Philadelphia, Pa.
 United American Metals Corp., 192 Diamond St., Brooklyn, N. Y.
 Victory—See Kahn Bros.
 Wildes Son, Thomas, 339 Fifth Ave., New York, N. Y. "Semper Idem."

SOLDER, SELF FLUXING—See Solder, Bar and Wire

SOLDER, WIRE—See Solder, Bar and Wire

SOLDERING ACID—See Flux, Soldering

SOLDERING FLUID—See Flux, Soldering

SOLDERING FLUX—See Flux, Soldering

SOLDERING FURNACES—See Furnaces, Soldering

SOLDERING IRONS, COPPER—See Irons, Copper Soldering

SOLDERING PASTE—See Flux, Soldering

SOLDERLESS COUPLINGS—See Unions, Tubing

SOLDERLESS FITTINGS—See Unions, Tubing

SOLID TIRES—See Tires, Solid

SOLID WRENCHES—See Wrenches, Nut and Bolt

SOLUTIONS, RUST PREVENTING—See Compounds, Rust Preventing and Removing

SPADES and SHOVELS, Collapsible

(For carrying on car when touring)

Barnard Specialty Co., 3300 Maple Ave., Los Angeles, Cal.
 Ideal Mfg. Co., 14th & Harrison Sts. (North Kansas City), Kansas City, Mo.
 Nostuk Mfg. Co., 2124 N. Clark St., Chicago, Ill.
 Waynesburg Pressed Steel Co., Waynesburg, Pa.
 Wood Shovel & Tool Co., Piqua, O.
 Wyoming Shovel Works, Wyoming, Pa.

SPANNERS, BOLT—See Wrenches, Nut and Bolt

SPARE TIRE COVERS—See Covers, Spare Tire

SPARE TIRE HOLDERS—See Holders, Tire

SPARE TIRE LOCKS—See Locks, Spare Tire

SPARE WHEELS—See Wheels, Special

SPARE WHEEL CARRIERS FOR FORDS—See Holders, Spare Wheel

SPARE WHEEL HOLDERS FOR FORDS—See Holders, Spare Wheel

SPARE WHEELS, WRECKING—See Trucks, Castors and Spare Wheels, Wrecking

SPARK ARRESTERS—See Arresters, Tractor Spark

SPARK COIL BOXES—See Boxes, Spark Coil

Everything is listed under the NOUN or principal word

- SPARK COILS**—See Coils, Spark
- SPARK GAPS**—See Gaps, Spark
- SPARK INDICATORS**—See Gaps, Spark
- SPARK LEVER GRIPS**—See Grips, Throttle
- SPARK LEVER LOCKS FOR FORDS**—See Locks, Spark Lever
- SPARK PLUG BRUSHES**—See Brushes, Spark Plug
- SPARK PLUG BUSHINGS**—See Bushings, Spark Plug Testing
- SPARK PLUG CASES**—See Cases, Spark Plug
- SPARK PLUG CLEANERS**—See Cleaners, Spark Plug
- SPARK PLUG MICA**—See Mica
- SPARK PLUG POINT PROTECTORS**—See Protectors, Spark Plug Point
- SPARK PLUG PORCELAINS**—See Porcelain
- SPARK PLUG SWITCHES**—See Switches, Spark Plug
- SPARK PLUG TERMINALS**—See Terminals, Wire
- SPARK PLUG TESTERS**—See Testers, Spark Plug
- SPARK PLUG WRENCHES**—See Wrenches, Nut and Bolt
- SPARK PLUGS**—See Plugs, Spark
- SPARK POINTS**—See Points, Sparking
- SPARK RETARDERS FOR FORDS**—See Retarders, Automatic Spark
- SPARK TIMERS**—See Timers, Ignition
- SPARK AND THROTTLE ROD ANTI-RATTLERS FOR FORDS**—See Anti-Rattlers, Spark and Throttle Rod
- SPEAKING TUBES**—See Tubes, Speaking
- SPEED CHANGE GEARS**—See Gears, Transmission
- SPEED CHANGE LEVERS**—See Levers, Brake
- SPEED CONTROLLERS**—See Governors, Gasoline Engine
- SPEED INDICATORS, TRACTOR**—See Indicators, Tractor Engine Speed
- SPEED METERS**—See Speedometers
- SPEEDOMETER DIALS**—See Dials, Luminous
- SPEEDOMETER GEARS**—See Gears and Pinions, Speedometer
- SPEEDOMETER JOINTS**—See Joints, Speedometer Swivel
- SPEEDOMETER LAMPS**—See Lamps, Electric Dash
- SPEEDOMETER LAMPS FOR FORDS**—See Lamps, Electric Speedometer
- SPEEDOMETER PINIONS**—See Gears and Pinions, Speedometer
- SPEEDOMETER REPAIR PARTS**—See Parts, Speedometer Repair
- SPEEDOMETERS**
- ASR—See Auto Speed Recording Co.
Auto Speed Recording Co., 3936 Lincoln Ave., Chicago, Ill. "ASR."
Champion Ignition Co., Flint, Mich. (See page 681.)
Consolidated Instrument Co. of America, 461 Eighth Ave., New York, N. Y. "O. S." (Importers.) (See page 841.)
Corbin Brown—See Corbin Screw Corp.
Corbin Screw Corp., 227 High St., New Britain, Conn. "Corbin Brown."
Detroit Instrument Co., 261 E. Jefferson Ave., Detroit, Mich.
Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (New Jersey Distributors for "J-M" Speedometers.) (See page 495.)
Hamilton Corp., Columbia Ave., Lancaster, Pa.
J-M—See Johns-Manville Co.
Johns-Manville Co., H. W. Madison Ave. & 41st St., New York, N. Y. "J-M."
O. S.—See Consolidated Instrument Co. of America.
Smith & Sons, S., 154 Nassau St., New York, N. Y. (See page 257.)
Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 787.)
Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)
Troy Carriage Sun Shade Co., Troy, O.
Veeder Mfg. Co., 22 Sergeant St., Hartford, Conn. (See page 585.)
Waltham Watch Co., Waltham, Mass.
- SPEEDOMETERS, for Fords**
- ASR—See Auto Speed Recording Co.
Auto Speed Recording Co., 3936 Lincoln Ave., Chicago, Ill. "ASR."
Corbin Screw Corp., 227 High St., New Britain, Conn.
Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (New Jersey Distributors for "J-M" Speedometers.) (See page 495.)
J-M—See Johns-Manville Co.
Johns-Manville Co., H. W. Madison Ave. & 41st St., New York, N. Y.
Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 787.)
Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)
- SPHERICAL BALLOONS**—See Balloons, Spherical
- SPINDLE ARM SILENCERS FOR FORDS**—See Anti-Rattlers, Spindle Arm

Everything is listed under the NOUN or principal word

SPINDLES, Emergency Rear Axle, for Fords

Breitenbach Machine Co., Milwaukee, Wis.
Brochu, A. D., 5 Pavillion St., Hartford, Conn.
Ekern-Turk Mfg. Co., Pipestone, Minn.
Hinckley-Myers Co., Water St., Jackson, Mich.

Kraeuter & Co., Newark, N. J.
(See page 643.)

Paro Co., H. G., 1416 Michigan Ave., Chicago, Ill. (See page 441.)

Shambaugh Mfg. Co., Lafayette, Ind.
Slipson Co., 207 Farwell Ave., Milwaukee, Wis.

SPINDLES, FRONT WHEEL, FOR FORDS —See Spindles, Special Front Wheel

SPINDLES, Special Front Wheel— For Fords

Mospico—See Motor Spindle Corp.
Motor Spindle Corp., 93 E. Jefferson Ave., Detroit, Mich. "Mospico."
(See page 791.)

SPIRAL WIRE BELTS—See Belts, Spiral Wire

SPLASH PANS FOR FORDS—See Pans, Radiator Splash

SPOKE TIGHTENING COMPOUNDS—See Compounds, Wood Wheel Tightening

SPOKES, Wire

Kalamazoo Spoke & Nipple Co., Kalamazoo, Mich.

National Screw & Tack Co., 2440 E. 75th St., Cleveland, O.

Standard Co., Torrington, Conn.

Wire Goods Co., 28 Union St., Worcester, Mass.

SPONGES and CHAMOIS

American Sponge & Chamols Co., 47 Ann St., New York, N. Y. "Mermaid."

Bel Jan-Tan—See Hart Export Co.

Bloch, Joseph, 51 Cliff St., New York, N. Y. (Importer.)

Bloch & Sons, A., 101 Barclay St., New York, N. Y.

Carbondale Sponge Co., 73 Warren St., New York, N. Y. (Importers.)

Chamoline—See Van Schaack & Sons.

Colossus—See Rhodes & Co.

Consumers Sponge Co., 675-85 S. Salina St., Syracuse, N. Y. "Usaspong."

Davis & Sons, D., 45 Warren St., New York, N. Y. (Importers.) "Vel Volla."

Florida Sponge & Chamols Co., 73 Gold St., New York, N. Y. (Importers.)

Frierich & Mansell, 74 Grand St., New York, N. Y. (Importers.)

Fuchs Co., Max, 244 Pearl St., New York, N. Y.

Greek-American Sponge Co., 300 W. Randolph St., Chicago, Ill. (Importers.)

Hart Export Co., 266 Fifth Ave., New York, N. Y. "Bel Jan-Tan."

Isaacs Co., A., 58 Beekman St., New York, N. Y.

Louden & Hill, 624 Arch St., Philadelphia, Pa.

Mermaid—See American Sponge & Chamols Co.

Miami Drug Co., Miami, Fla.

Nassau Sponge Co., 232 W. Lake St., Chicago, Ill.

National Sponge & Chamols Co., 153 William St., New York, N. Y. (Importers.)

Niehaus Co., Jos., 341 W. Fourth St., Cincinnati, O. (Importers.)

Rhodes & Co., James H., 518 W. Austin Ave., Chicago, Ill. (Importers.) "Colossus."

Smith, Kline & French Co., 429 Arch St., Philadelphia, Pa.

Usaspong—See Consumers Sponge Co.

Van Schaak & Sons, Peter, 310-14 W. Washington St., Chicago, Ill. "Chamoline."

Vel Volla—See Davis & Sons.

Western Robe Mills, 24 E. Eighth St., Chicago, Ill. (Importers.)

SPOOL SILK—See Silk, Spool

SPOT LAMPS—See Lights, Spot

SPOTLIGHTS—See Lights, Spot

SPRAGS, RATCHET, FOR FORDS—See Stops, Ratchet

SPREADERS, RIM—See Tools, Demountable Rim Contracting

SPREADERS, SPRING LEAF—See Tools, Spring Leaf

SPREADERS, TIRE—See Tools, Tire

SPRING BELTS—See Belts, Spiral Wire

SPRING BOLTS—See Bolts, Spring Shackles

SPRING BUMPER—See Bumpers, Spring

SPRING CLIPS—See Clips, Spring

SPRING CONNECTING TOOLS, TRANSMISSION BAND FOR FORDS—See Tools, Transmission Band Spring Connecting

SPRING COTTERS—See Pins, Cotter

SPRING COVERS—See Cups and Covers, Spring Leaf Lubricating

SPRING ENGINE STARTERS FOR FORDS—See Starters, Mechanical or Spring Engine

SPRING EYE FORMING TOOLS—See Tools, Spring Eye Forming

SPRING HANGERS FOR FORDS—See Hangers, Spring

SPRING LEAF LUBRICATING COVERS—See Cups and Covers, Spring Leaf Lubricating

SPRING KEY PRIMING CUPS—See Cups, Spring Key Priming

SPRING LEAF LUBRICATING CUPS—See Cups and Covers, Spring Leaf Lubricating

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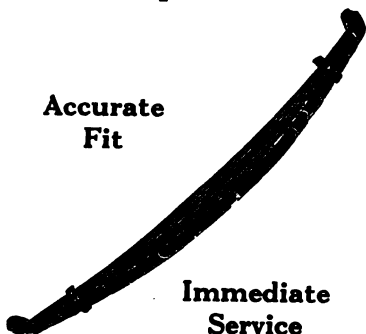
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Covers, Spring Leaf Lubricating

SPRING LEAF OILERS—See Cups and

Covers, Spring Leaf Lubricating

SPRING LEAF SEPARATING TOOLS—

See Tools, Spring Leaf Separating

SPRING LIFTING TOOLS—See Tools,

Valve Spring Lifting and Compressing

SPRING LUBRICANTS—See Lubricants,

Spring

SPRING LUBRICATORS—See Lubricators,

Spring and Shackle Bolt

SPRING OILERS—See Cups and Covers,

Spring Leaf Lubricating

SPRING OILING BOXES—See Cups and

Covers, Spring Leaf Lubricating

SPRING REPAIR CLAMPS—See Clamps,

Spring Repair

SPRING SHACKLE BOLTS—See Bolts,

Spring

SPRING SHOCK ABSORBERS—See Shock

Absorbers, Spring

SPRING SPREADERS—See Tools, Spring

Leaf Separating

SPRING STARTERS FOR FORDS—See

Starters, Mechanical or Spring

SPRING STEEL—See Steel, Spring**SPRING STRAIGHTENING MACHINES—**

See Machines, Leaf Spring Straightening

SPRING SUPPORT CLAMPS—See Clamps,

Special Cantilever Spring Support

SPRING TESTING MACHINES—See Ma-

chines, Spring Testing

SPRING WASHERS—See Washers, Steel

Spring; also Nuts and Washers, Lock

SPRING WHEELS—See Wheels, Special**SPRING WIRE—See Wire, Steel Spring****SPRINGS, CHAIN TIGHTENING — See**

Tighteners, Tire Chain

SPRINGS, COIL—See Springs, Machinery**SPRINGS, CUSHION—See Springs, Seat****SPRINGS, DUMMY FRONT, FOR FORDS**

—See Extensions, Dummy Frame

SPRINGS, ENGINE VALVE—See Springs,

Machinery

SPRINGS, Engine Valve, for Fords

Hill-Smith Metal Goods Co., 82 Brookline
Ave., Boston, Mass.

Nelson Mfg. Co., A., 2700 Southport Ave., Chi-
cago, Ill.

U. S. Metal Goods Co., 5211 Euclid Ave.,
Cleveland, O.

SPRINGS, Leaf

Alloy Steel Spring Co., Jackson, Mich.

American Autoparts Co., 1807 Gratiot
Ave., Detroit, Mich. (See page 791.)

American Spiral Spring & Mfg. Co., 56th &
Butler Sts., Pittsburgh, Pa.

Anchor—See Sheldon Axle & Spring Co.

Ansted Spring & Axle Co., Connorsville, Ind.

Beams Spring Co., Oberlin Rd., Massillon, O.

Better—See New Era Spring & Specialty Co.

Betts Brothers Spring Co., 1221-23 Mission
St., San Francisco, Cal.

Betts Spring Co., 388 Folsom St., San Fran-
cisco, Cal.

Buffalo Automobile Spring Co., 148 Vir-
ginia St., Buffalo, N. Y. (See page 798.)

C. G. Spring Co., Kalamazoo, Mich.
(See page 794.)

Cambria Spring Co., 916-18 S. Los Angeles St.,
Los Angeles, Cal.

Champ Spring Co., 2107 Chouteau Ave., St.
Louis, Mo.

Champion Auto Spring Co., 3141-49 Pine
St., St. Louis, Mo. (See page 791.)

Cooper Spring Co., Leader News Bldg., Cleve-
land, O.

Delany & Son, D., 214 Liberty St., Newark,
N. J.

Detroit Motor Parts Co., 133-35 W. Larned
St., Detroit, Mich.

Detroit Steel Products Co., 2250 E. Grand
Blvd., Detroit, Mich.

Diamond—See Terre Haute Auto Spring Co.

Duer Spring & Mfg. Co., Pittsburgh, Pa.

E. C.—See Hoover Spring Co.

E. C. V.—See Hoover Spring Co.

Garden City Spring Works, 2300 Archer Ave.,
Chicago, Ill.

Harvey Spring & Forging Co., 106A 17th St.,
Racine, Wis.

Higgins Spring & Axle Co., Racine, Wis.
"Quality."

Hoover Spring Co., 201-29 Franklin St., San
Francisco, Cal. "E. C." "E. C. V."

Iner-oil—See Olcese Lubricating Spring &
Equipment Co.

Iron City Spring Co., Pittsburgh, Pa.
(See page 794.)

Jenkins Vulcan Spring Co., Richmond,
Ind. "Vulcan." (See page 929.)

Keystone Spring Works, 1313 Buttonwood St.,
Philadelphia, Pa.

Kimball—See Pittsburgh Auto Spring Co.

Laher Auto Spring Co., 34 N. 15th St., Port-
land, Ore.

Lewis Spring & Axle Co., 42 Holler St., Chal-
sea, Mich.

Liggett Spring & Axle Co., Monongahela, Pa.

Lyons Co., Edward F., 1600-34 E. Euclid Ave.
Detroit, Mich.

Maremont Mfg. Co., 916-18 S. Wabash
Ave., Chicago, Ill. (See page 791.)

Mather Spring Co., Toledo, O.

(See page 793.)

Merrill Spring Co., E. R., 526-23 W. 28th
St., New York, N. Y.

National Spring Co., New Castle, Ind.
"Stanley." (See page 799.)

Everything is listed under the NOUN or principal word

"The Spring Is the Thing"



MATHER SPRINGS

Scientifically Heat-Treated
designed to insure

Maximum of Elasticity & Endurance
with

Minimum of Vibration



Genuine made only by

The Mather Spring Company
Toledo, Ohio.

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SPRINGS

KALAMAZOO, MICH.
SUCCESSORS TO THE KALAMAZOO SPRING & AXLE CO.

High Grade Springs for Automotive Manufacturers



We are splendidly equipped with modern facilities to take care of your requirements. We make them for Automobiles, Trucks, Tractors and Trailers. We respectfully solicit your inquiry

Factory representative: **THOMAS J. WETZEL**
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NEW YORK CITY **DETROIT, MICH**
PITTSBURGH, PENNA.

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The following Tuthill Distributors will gladly send you a free copy of the 1921 Price List—Springs for all models—as far back as 1906. WRITE TODAY.

ALABAMA		KANSAS—(Continued)		NEW YORK	
Interstate Electric Co. of	Alabama	Lee Hardware Co.	Salina	Albany Hardware & Iron Co.	Albany
Moore-Handley Hdw. Co.	Birmingham	Southwick Auto. Supply Co.	Topeka	Joseph Strauss Co., Inc.	Buffalo
Johnson Tire & Auto Co.	Montgomery	W. A. L. Thompson Hdw. Co.	Topeka	W. E. Fruden Hdw. Co.	New York
ARKANSAS		Shattuck-George Co.	Wichita	Whittemore-Sim Co., Inc.	New York
Atkinson-Williams Hdw. Co.	Co.	Morton-Simmons Hdw. Co.	Wichita	Sidney B. Roby Co.	Rochester
Fort Smith Auto. Sup. Co.	Fort Smith	Andrew Cowan & Co., Inc.	Louisville	Clancy Hdw. Co.	Syracuse
Crow-Burlingame Co.	Fort Smith	Robinson Bros. & Co., Inc.	Louisville	NORTH CAROLINA	
Yoss-Button Mfg. Co.	Little Rock	LOUISIANA		Carrollas Auto Sup. House	Charlotte
Benton County Hdw. Co.	Little Rock	Electric Appliance Co.	New Orleans	Odell Hardware Co.	Greensboro
Turner Auto Supply Co.	Rogers	Interstate Electric Co.	New Orleans	Interstate Motor Equip. Co.	Raleigh
CALIFORNIA		Interstate Electric Co. of	Shreveport	NORTH DAKOTA	
Chanisor & Lyon Co.	Fresno	Inc.	Shreveport	J. D. Grant Co.	Fargo
Chanisor & Lyon Co.	Los Angeles	MAINE		OHIO	
Chanisor & Lyon Co.	Oakland	Post & Lester Co.	Portland	The Dine-DeWees Co.	Canton
Chanisor & Lyon Co.	San Francisco	MARYLAND		Ohio Rubber Co.	Cincinnati
COLORADO		Baltimore Gas & Light Co.	Baltimore	Gray Brothers	Cleveland
Auto Equipment Co.	Denver	Baltimore Hub Wheel & Mfg. Co.	Baltimore	Griswold-Bohl Co.	Columbus
CONNECTICUT		MASSACHUSETTS		Goswick-Braun Co.	Toledo
Post & Lester Co.	Bridgeport	Post & Lester Co.	Boston	The Toledo Rubber Co.	Toledo
Post & Lester Co.	Bridgeport	Post & Lester Co.	Boston	Union Supply Co.	Toledo
Post & Lester Co.	New Britain	Post & Lester Co.	Springfield	United States Rubber Co.	Toledo
Post & Lester Co.	New Haven	Post & Lester Co.	Worcester	Stanbaugh-Thompson Co.	Youngstown
Post & Lester Co.	New London	MICHIGAN		Russell Hdw. Co.	McAllister
Post & Lester Co.	Waterbury	Automobile Supply Co.	Detroit	J. B. Burwell Sup. Co.	Oklahoma City
DISTRICT OF COLUMBIA		General Sales Co.	Detroit	OREGON	
F. P. May Hdw. Co.	Washington	Michigan Automobile Sup. Co.	Detroit	Chanisor & Lyon Co.	Portland
Charles Rubel & Co.	Washington	Roehm & Davidson	Detroit	F. Hersh Hdw. Co.	Allentown
Rudolph & West Co.	Washington	Watkins & Radcliffe Co.	Detroit	C. H. Miller Hdw. Co.	Huntington
FLORIDA		Delta Hardware Co.	Escanaba	Horr & Company	Lancaster
G. Norman Baughman Co.	Jacksonville	Gumlings Brothers	Flint	Gaul Derr & Shearer Co.	Philadelphia
G. Norman Baughman Co.	Miami	Shurwood Hall Co., Ltd.	Grand Rapids	Suppl's Biddle Hdw. Co.	Philadelphia
G. Normal Baughman Co.	Tampa	Beard, Campbell & Co.	Fort Huron	Manufacturers' Sup. Co.	Philadelphia
GEORGIA		MINNESOTA		J. H. McCullough Co.	Philadelphia
Elyea Company	Atlanta	W. K. Supply Co.	Albert Lea	Simmons Hdw. Co.	Philadelphia
Ozburn-Abston & Co.	Atlanta	Kelley-How-Thomson Co.	Duluth	Standard Supply & Equip. Co.	Philadelphia
IDAHO		Southern Minnesota Motor Supply Co.	Duluth	Joseph Woodwell Co.	Pittsburgh
Bertram Motor Supply Co.	Bulise	Automotive Supply Co.	Manitowish	Lansing Bros., Inc.	Scranton
Salt Lake Hardware Co.	Pocatello	Hennepin Hdw. Co.	Minneapolis	RHODE ISLAND	
ILLINOIS		W. S. Nott Co.	Minneapolis	Post & Lester Co.	Providence
Automobile Supply Co.	Chicago	Piant Rubber Co.	Minneapolis	SOUTH CAROLINA	
Reckley-Ralston Co.	Chicago	Simmons Hardware Co.	Minneapolis	The Cameron & Barkley Co.	Charleston
Butler Brothers	Chicago	Western Motor Sup. Co.	Minneapolis	C. D. Franke & Co.	Charleston
General Electric Co.	Chicago	Hackett, Gates, Hurty Co.	St. Paul	D. W. Alderman, Jr.	Florence
Chicago Auto Equip. Co.	Chicago	P. R. L. Hardenbergh & Co.	St. Paul	D. W. Alderman, Jr.	Greenville
Chicago Auto Equip. Co.	Chicago	Minnesota Harness Fac., Inc.	Winona	SOUTH DAKOTA	
Electric Appliance Co.	Chicago	MISSISSIPPI		The Brownell Co.	Aberdeen
Marshall Field & Co.	Chicago	Auto Supply Co.	Jackson	Spaulding Supply Co.	Aberdeen
Hibbard, Spencer & Bartlett	Chicago	MISSOURI		Huron Auto Supply Co.	Huron
Hine, Watt Mfg. Co.	Chicago	Joplin Supply Co.	Joplin	The Brownell Co.	Sioux Falls
John C. Hoof Co.	Chicago	Sorber-Kuhn Auto Supply Co.	Joplin	TENNESSEE	
E. D. Kimball & Co.	Chicago	Bonniwell-Calvin Iron Co.	Kansas City	James Supply Co.	Chattanooga
Motor Car Supply Co.	Chicago	The Equipment Co.	Kansas City	Tennessee Mill & Mine Supply Co.	Knoxville
Sheridan Auto Supply, Inc.	Chicago	Faeth Co.	Kansas City	Ogill Bros. & Co.	Memphis
Universal Automotive Sup. Co.	Chicago	Harbison Mfg. Co.	Kansas City	Ozburn-Abston & Co.	Memphis
Whitaker Mfg. Co.	Chicago	Fidelity Auto Supply Co.	Kansas City	Auto Supply Co.	Nashville
E. B. Collins Co.	Danville	Kansas City Auto. Sup. Co.	Kansas City	TEXAS	
Barrett Hardware Co.	Joliet	Motor & Machinists' Supply Co.	Kansas City	Electric Appliance Co.	Dallas
National E. & A. Supply Co.	Peoria	The Richards & Conover Hdw. Co.	Kansas City	Hans Johnson	Dallas
Roid Motor Supply Co.	Quincy	Stowe Supply Co.	Kansas City	Tri-States Accessories Corp.	El Paso
Tenk Hardware Co.	Quincy	Townley Metal & Hdw. Co.	Kansas City	The Equipment Co. of Tex.	Fort Worth
Washington Auto Sup. Co.	Washington	Goddard-White Co.	Kansas City	Texas Auto Supply Co., Inc.	Fort Worth
INDIANA		Ayers-Farmer Auto Sup. Co.	St. Joseph	Roper, Harris & Dunn Co., Inc.	Greenville
Orr Iron Company	Evansville	Rosa-Frazier Auto Sup. Co.	St. Joseph	UTAH	
R. M. Kaough Co.	Fort Wayne	Robinson Heavy Hdw. Co.	St. Joseph	Salt Lake Hdw. Co., Salt Lake City	Salt Lake City
W. J. Holliday & Co.	Indianapolis	Beck & Corbit Iron Co.	St. Louis	Richmond Hardware Co.	Richmond
Power Supply Co.	Terre Haute	Fred Campbell Auto Sup. Co.	St. Louis	WASHINGTON	
IOWA		Campbell Iron Co.	St. Louis	Chanisor & Lyon Co.	Seattle
Robert Donahue Iron & Hdw. Co.	Burlington	Gellar, Ward & Hasner Hdw. Co.	St. Louis	Chanisor & Lyon Co.	Spokane
Cedar Rapids Pump & Supply Co.	Cedar Rapids	Shapleigh Hdw. Co.	St. Louis	Chanisor & Lyon Co.	Tacoma
Sieg Company	Davenport	J. B. Sickles Saddlery Co.	St. Louis	WEST VIRGINIA	
Herring Motor Co.	Des Moines	Simmons Hardware Co.	St. Louis	Baldwin Supply Co.	Charleston
Hippee-States Co.	Des Moines	Silgo Iron Store Co.	St. Louis	Williams Hdw. Co.	Clarksburg
John Ernstdorf Iron Co.	Dubuque	The Straus Co.	St. Louis	Emmons-Hawkins Hdw. Co.	Huntington
Midwest Auto Supply Co.	Dubuque	Ozark Motor & Sup. Co.	Springfield	Van Zandt-Lefewich Auto. Sup.	Huntington
Prinia Hardware Co.	Fort Dodge	NEBRASKA		T. T. Hutchinson & Co.	Wheeling
Harper & McIntire Co.	Ottumwa	W. M. Dutton & Sons Co.	Hastings	WISCONSIN	
Sioux City Iron Co.	Sioux City	Nebraska Bulck Auto Co.	Lincoln	Julius Andrus & Sons Co.	Milwaukee
William Warnock Co.	Sioux City	Paxton & Gallagher Co.	Omaha	The Auto Supply Co.	Milwaukee
KANSAS		Western Auto Supply Co.	Omaha	Wm. Frankfurth Hdw. Co.	Milwaukee
Blish, Mize & Silliman Hdw. Co.	Atchison	NEW JERSEY		Tisch Auto Supply Co.	Milwaukee
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The Frank Colladay Hdw.	Hutchinson	Guaranteed Forever Against Center Breakage			

TUTHILL SPRING COMPANY
Established 1880

760 Polk Street
Chicago, Illinois

TITANIC
Trade Mark Reg.

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SPRINGS, Leaf (Continued)

New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Better."

Northwestern Spring Mfg. Co., 3718-28 University Ave., N. E., Minneapolis, Minn.

Oleco Lubricating Spring & Equipment Co., 10 S. La Salle St., Chicago, Ill. "Iner-Oil."

Palmer, Jos., 333 Rutherford Ave., Boston, Mass.

Penn Spring Works, Baldwinsville, N. Y.

Perfection—See Standard Parts Co.

Philadelphia Spring Works, 1439 N. Hutchinson St., Philadelphia, Pa. "Tuftest."

Pittsburgh Auto Spring Co., 5915 Centre Ave., Pittsburgh, Pa. "Kimball."

Quality—See Higgins Spring & Axle Co.

Rowland, William & Harvey, Philadelphia, Pa.

Service Spring Co., 735 St. Paul St., Indianapolis, Ind.

Sheldon, Axle & Spring Co., Wilkes-Barre, Pa. "Anchor."

Shunk Mfg. Co., Bucyrus, O.

Spring Perch Co., Long Brook Ave., Stratford, Conn.

Stan-Par—See Standard Parts Co.

Standard Parts Co., Cleveland, O. "Stan-Par," "Perfection." (See pages 85, 119, 701 and 798.)

Standard Steel Spring Co., Coraopolis, Pa.

Stanley—See National Spring Co.

Sterling Spring Co., 2148-62 Scranton Rd., Cleveland, O.

Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. (See page 787.)

Terre Haute Auto Spring Co., Terre Haute, Ind. "Diamond."

Titanio—See Tuthill Spring Co.

Triangle Automobile Spring Co., 30th St. & Penn Ave., Pittsburgh, Pa.

Triple Action Spring Co., of New York, 549 W. 59th St., New York, N. Y.

Troy Spring Works, 394-96 Congress St., Troy, N. Y.

Tuftest—See Philadelphia Spring Works.

Tuthill Spring Co., 760 Polk St., Chicago, Ill. "Titanic." (See page 795.)

United States Spring Co., 1120-26 S. Los Angeles St., Los Angeles, Cal.

Vulcan—See Jenkins Vulcan Spring Co.

SPRINGS, Leaf, for Fords

(Including elliptic, semi-elliptic and cantilever springs to replace regular springs)

Betts Brothers Spring Co., 1221-23 Mission St., San Francisco, Cal.

Buffalo Automobile Spring Co., 146 Virginia St., Buffalo, N. Y. (See page 798.)

E. C.—See Hoover Spring Co.

E. C. V.—See Hoover Spring Co.

Garden City Spring Works, 2300 Archer Ave., Chicago, Ill. "Ralcov."

H. L. G. Co.—Universal Sales Co.

Higgins Spring & Axle Co., Racine, Wis. "Quality."

Hoover Spring Co., 201-29 Franklin St., San Francisco, Cal. "E. C." "E. C. V."

Leafless Spring Co., Michigan Trust Bldg., Grand Rapids, Mich.

Longford—See Sterling Spring Co.

New Era Spring & Specialty Co., 51-55 Cottage Grove St., S. W., Grand Rapids, Mich. "Saviour."

Quality—See Higgins Spring & Axle Co.

Ralcov—See Garden City Spring Works.

Saviour—See New Era Spring & Specialty Co.

Service Spring Co., 735 St. Paul St., Indianapolis, Ind.

Shunk Mfg. Co., Bucyrus, O.

Steel Wings Co., 670 Washington Blvd., Chicago, Ill. (See page 765.)

Sterling Spring Co., 2148-62 Scranton Rd., Cleveland, Ohio. "Longford."

Superior Steel Spring Co.—See Zinke Co.

Temme Spring Corp., 2810-12 S. Michigan Blvd., Chicago, Ill. (See page 787.)

Titanio—See Tuthill Spring Co.

Triangle Automobile Spring Co., 30th St. & Penn Ave., Pittsburgh, Pa.

Tuthill Spring Co., 760 Polk St., Chicago, Ill. "Titanic." (See page 795.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Superior Steel Spring Co., Mt. Clemens, Mich.)

SPRINGS, Machinery or Coil

Advance Spring & Wire Co., 1749-55 Carroll Ave., Chicago, Ill.

Aero—See Detroit Spring Co.

American Automatic Products Corp., 865 N. Sangamon St., Chicago, Ill.

American Spiral Spring & Mfg. Co., 56th & Butler Sts., Pittsburgh, Pa.

American Spring & Mfg. Corp., Holly, Mich.

American Steel & Wire Co., Chicago, Ill.

Barnes Co., Wallace, Bristol, Conn.

Betts Brothers Spring Co., 1221-23 Mission St., San Francisco, Cal.

Cary Spring Works, 240 W. 29th St., New York, N. Y.

Chatillon & Sons, John, 85-93 Cliff St., New York, N. Y.

Chicago Coil Spring Co., 323 N. Albany Ave., Chicago, Ill.

Cleveland Wire Spring Co., 1281 E. 35th St., Cleveland, O.

Cofal Auto Parts Co., National City Bank Bldg., Cleveland, O. (Manufacturers' Agents.) (See page 509.)

Cook Spring Co., 420 E. 106th St., New York, N. Y.

Cuyahoga Spring Co., 16612 Waterloo Rd., Cleveland, O.

D'Arcy Spring Co., Kalamazoo, Mich.

Detroit Spring Co., 406 W. Jefferson Ave., Detroit, Mich. "Aero."

Duer Spring & Mfg. Co., Pittsburgh, Pa.

Dunbar Bros. Co., 80 South St., Bristol, Conn.

Eagle—See Miller & Van Winkle.

Eureka Spring Co., 150 Bleeker St., New York, N. Y.

Fischer Spring Co., Chas., 473 Kent Ave., New York, N. Y.

Gardner Wire Co., 5642-48 Race Ave., Chicago, Ill.

General Spring & Wire Co., 1930 Marston Ave., Detroit, Mich.

Gibson Co., William D., 1802 Clybourn Ave., Chicago, Ill. (See page 797.)

Hebb, George A., Austin & Miller Sts., Newark, N. J.

Hubbard Spring Mfg. Co., Pontiac, Mich. (See page 798.)

Humason Mfg. Co., Forestville, Conn.

Kokomo Spring Co., 329 Firmin St., Kokomo, Ind.

Miller & Van Winkle, 18 Bridge St., Brooklyn, N. Y. "Eagle."

Mitchell Spring Works, W. G., Johnstown, Pa.

Murray Spring Co., Wm. A., 123-25 Sycamore St., Cincinnati, O.

New York Wire & Spring Co., Hoboken, N. J.

Peck Spring Co., Plainville, Conn. (See page 799.)

Railway Steel-Spring Co., 30 Church St., New York, N. Y.

Raymond Mfg. Co., W. Church St., Corry, Pa.

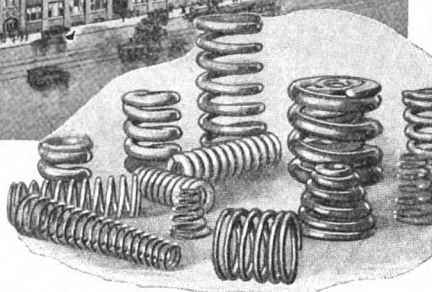
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SPRINGS



**COILED
TORSION-EXTENSION
COMPRESSION-SPECIAL FLAT
TYPE SPRINGS**



MADE FROM

**CRUCIBLE SPRING STEEL—ALLOY STEEL
OPEN HEARTH SPRING STEEL—MUSIC WIRE
PHOSPHOR BRONZE AND BRASS**

Write for "Free Book
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Valuable Data for En-
gineering Dept.



WE have acquired a knowledge that can only be obtained from experience, and this accounts for the excellence, uniformity of temper, exactness of size and finish of our springs. Knowledge of material, improved machinery, experienced workmen and care in testing our work before delivery, are the prime reasons why our springs are used by the leading concerns throughout the country.

"MAKING SPRINGS NEARLY 50 YEARS"

THE

WM. D. GIBSON COMPANY

1802 Clybourn Ave.

CHICAGO

ILLINOIS

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Buffalo Automobile Spring Co., Inc.

Manufacturers!
Let us quote on
your Spring
requirements.

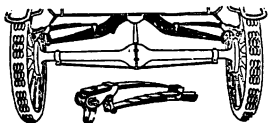


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Front Springs for
Fords ready for im-
mediate delivery.
Write for prices.

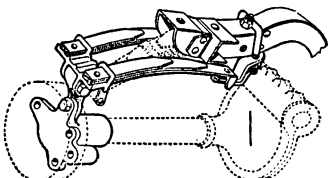
SCIENTIFICALLY HEAT-TREATED SPRINGS

Office and Factory: 146 Virginia Street, Buffalo, N. Y.

Hilliard Anti-Shock Springs for Fords (Passenger Cars and 1-Ton Trucks)



The simplest, most easily installed, most effective Rebound Check, Shock Absorber and Stabilizer ever devised for the Ford. Guards the regular springs against breakage, cushions all shocks from above and below, and positively prevents the side throw peculiar to the Ford suspension.
Three models: Regular for roadster, touring car and coupe; heavy for sedans and commercial cars; special model for 1-ton truck. Broken parts replaced free at any time.



Retail prices: per set, regular type.....\$19.50
Sedan type....\$19.50 For one-ton truck....\$40.00

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PERFECTION S P R I N G S



Recognized merit has put Perfection Springs under more than a hundred makes of automobiles, trucks and trailers. Fifteen years of experience in the manufacture of carbon and alloy steel springs have helped make Perfection Springs a distinctive quality product. The tonnage capacity of this plant is such that your spring requirements can be promptly filled.

THE PERFECTION SPRING COMPANY
Cleveland, Ohio
Division of The Standard Parts Company

SPRINGS—COILED AND FLAT STEEL, BRASS AND PHOSPHOR BRONZE

SPRING COTTERS, SMALL WASHERS

16 lbs. Assorted Springs..... \$2.00
25 lbs. Assorted Cotters 5.00

Subject to market changes

Send for Catalogue

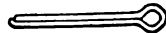
HUBBARD SPRING MFG. CO., Pontiac, Michigan

Welch Patent EXPANSION PLUG

For Closing Core Holes

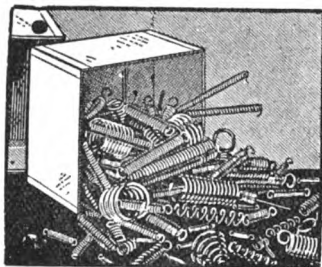


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SPECIAL POINTS
(FOR QUICK ASSEMBLY)

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PECK'S ASSORTED SPRINGS

The assortment consists of upwards of 100 steel and brass springs, suitable for Garages, Machine Shops and General Repair Shops. They are all useful springs and are the overrun, etc., of large orders which have been accumulating for some time. If made to order they would cost many times our prices. One spring when you need it will be worth more than the price of the entire assortment.

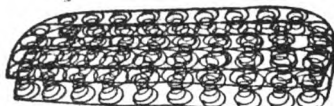
PRICES

1 Box	\$1.00 Each
5 Boxes	.75 Each
25 Boxes	.60 Each
50 Boxes	.50 Each

THE PECK SPRING CO.
PLAINVILLE, CONN.

THE WING PATTERN CUSHION SPRING

shown below is used by all the leading manufacturers of Automobiles in the East and has stood the test of ten years' service with satisfaction alike to makers of Cars as well as users.



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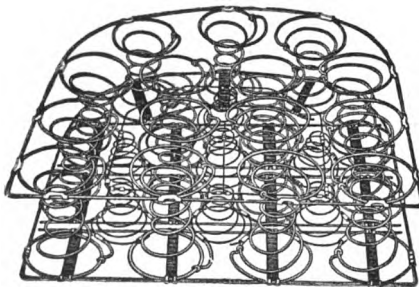
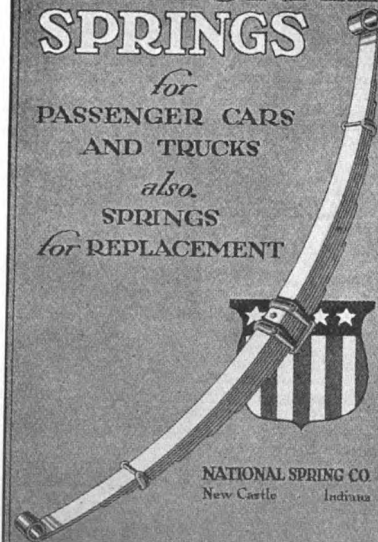
Manufactured by
THE CHARLES WING CO.
Amesbury, Mass., U. S.

Wholesale Distributors of aluminum sheets and mouldings, also manufacturers and wholesale dealers in all classes of automobile upholstering leather, and other materials.

NATIONAL SPRINGS

for
PASSENGER CARS
AND TRUCKS

also
SPRINGS
for REPLACEMENT



ROUGH RIDER SPRINGS (Patented)



Best Automobile Spring Ever Made
No Possible Bumps or Jars See these Auxiliary Springs

The Best Cushions are Made with
ROUGH RIDER SPRINGS
NOTHING SO COMFORTABLE

No Shocks or Jars when Rough Riders are used

Manufactured by
REYNOLDS SPRING CO., Jackson, Mich.
RANDOLPH EDWARDS CO. Exclusive Selling Agent

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SPRINGS, Machinery or Coil (Continued)

Reliance Spring & Mfg. Co., 3905 Second St., Brooklyn, N. Y.
 Sabin Machine Co., Montpelier, Vt.
 Tuck Mfg. Co., 74 Ames St., Brookton, Mass.
 Wilson, Robert P., 30 Clinton St., Newark, N. J.
 Wickwire-Spencer Steel Corp., Worcester, Mass. (See page 794.)

SPRINGS, Seat or Upholstery

Aero—See Detroit Spring Co.
 American Automatic Products Corp., 865 N. Sangamon St., Chicago, Ill.
 American Cushion Spring Co., Kalamazoo, Mich.
 American Steel & Wire Co., Chicago, Ill.
 Barber Mfg. Co., 1818 Brown St., Anderson, Ind.
 Black Velvet—See National Spring & Wire Co.
 Champion—See Wing Co.
 Chicago Coil Spring Co., 328 N. Albany Ave., Chicago, Ill.
 D'Arcy Spring Co., Kalamazoo, Mich.
 Dean Wire Goods Co., 189 Austin Ave., Worcester, Mass.
 Detroit Spring Co., 408 W. Jefferson Ave., Detroit, Mich. "Aero."
 Eagle—See Miller & Van Winkle.
 Fort Pitt Bedding Co., N. S., Pittsburgh, Pa. (See page 801.)
 Gibson Co., William D., 1802 Clybourn Ave., Chicago, Ill. (See page 797.)
 Globe Furniture Co., Northville, Mich.
 Hamm Clutch Spring Co., 115 N. Main St., Piqua, O.
 Interlocked Spring Seat Corp., 4801-19 S. Maplewood Ave., Chicago, Ill.
 Jenks & Muir Mfg. Co., 6441 Hastings St., Detroit, Mich.
 Kelley & Co., E., 561 Main St., Worcester, Mass.
 Kokomo Spring Co., 329 Firmin St., Kokomo, Ind.
 Lace Web—See Trenton Spring Mattress Co.
 Marshall Ventilated Mattress Co., 1454 S. Sangamon St., Chicago, Ill.
 Miller & Van Winkle, 18 Bridge St., Brooklyn, N. Y. "Eagle."
 Murray Spring Co., Wm. A., 123-25 Sycamore St., Cincinnati, O.
 Nachman Springfilled Co., 2241-53 S. Halsted St., Chicago, Ill.
 National Spring & Wire Co., Monroe & Mulberry Sts., Albion, Mich. "Black Velvet."
 "Rocky Road."
 Premier Cushion Spring Co., 2724 E. Grand Blvd., Detroit, Mich.
 Reynolds Spring Co., Jackson, Mich. "Rough Rider." (See page 799.)
 Rocky Road—See National Spring & Wire Co.
 Rough Rider—See Reynolds Spring Co.
 Sagless Auto Seat Co., 2210 S. Wabash Ave., Chicago, Ill.
 Simmons Mfg. Co., Kenosha, Wis.
 Snell Co., Charles W., 321 S. Jefferson St., Chicago, Ill.
 Staples & Hanford Co., Newburgh, N. Y.
 T. C. I.—See Trenton Spring Mattress Co.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributors.) (See page 81.)

Trenton Spring Mattress Co., Parker Ave., Trenton, N. J. "T. C. I." "Lace Web."
 Vincent-McCall Co., Market & Howland Sts., Kenosha, Wis.
 Wickwire-Spencer Steel Corp., Worcester, Mass. (See page 794.)
 Wing Co., Charles, Amesbury, Mass. "Champion." (See page 799.)
 Young Industries, L. A., 9200 Russell St., Detroit, Mich.

SPRINGS, STEERING GEAR—See Checks, Steering Gear**SPRINGS, SUPPLEMENTARY—See Shock Absorbers, Spring****SPRINGS, TIRE CHAIN TIGHTENING—See Tighteners, Tire Chain****SPRINGS, Tow Rope**

Zimmerman Mfg. Co., 247-51 W. Lincoln Way, Valparaiso, Ind.

SPRINGS, UPHOLSTERY—See Springs, Seat**SPRINGS, VALVE—See Springs, Machinery****SPRINGS, VALVE, FOR FORDS—See Springs, Engine Valve****SPROCKETS, Machined**

(For Sprocket Blanks—See Castings; also Forgings; also Gears, Blank)

Baldwin Chain & Mfg. Co., 199 Chandler St., Worcester, Mass.
 Boston Gear Works (Norfolk Downs), Quincy, Mass.
 Bultman Co., F. H., 10271 Berea Rd., Cleveland, O.
 Crofoot Gear Works, Hyde Park Ave. at Readville, Boston, Mass. (See page 421.)
 Cullman Wheel Co., 1856 Altgeld St., Chicago, Ill. (See page 801.)
 Forg Mfg. Co., Peter, 50 Park St., Somerville, Mass.
 De Voe Co., H. S., 411 N. Plum St., Muncie, Ind.
 Grant Gear Works, 151 Pearl St., Boston, Mass.
 Link-Belt Co., Indianapolis, Ind. (See page 233.)
 Weisel Press Mfg. Co., 945 Dorchester Ave., Boston, Mass. (See page 423.)
 Penmaid—See Pennsylvania Gear & Machine Co.
 Pennsylvania Gear & Machine Co., E. Tioga, Weikel & Janney Sts., Philadelphia, Pa. "Penmaid." (See page 425.)
 Sier-Bath Co., 143 W. 54th St., New York, N. Y. (See page 425.)
 Standard Gear Co., 1930 Commonwealth Ave., Detroit, Mich.

SQUARES, PISTON—See Jigs, Piston Aligning**STABILIZERS, CAR—See Shock Absorbers; also Springs, Supplementary**

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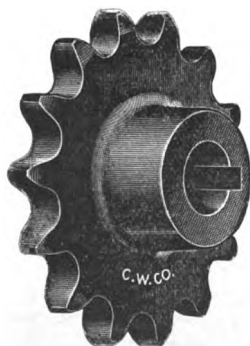
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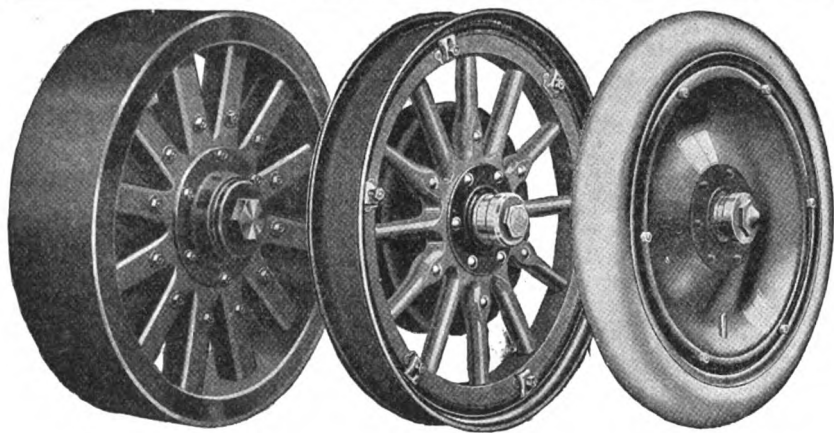
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STABILIZERS, DRIVE SHAFT—See Bearings, Drive Shaft**STABILIZERS, STEERING—See Checks, Steering****STAKE POCKETS—See Pockets, Truck Stake****STAMPINGS and PRESSINGS, Metal**

A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.
 Acklin Stamping Co., Toledo, O.
 (See page 807.)
 Acme Die & Stamping Co., 505 Chartiers Ave., McKees Rocks, Pa.
 Acme Motor Parts Corp., 355 E. Water St., Milwaukee, Wis.
 Acorn Motor Equipment Corp., 44 Penn St., Brooklyn, N. Y. (See page 121.)
 Adell Mfg. Co., Orange, Mass.
 Advance Engineering Co., 6539 Metta Ave., Cleveland, O.
 Advance Machinery Co., Van Wert, O.
 Advance Tool Works, 2300 Warren Ave., Chicago, Ill.
 Ajax Auto Parts Co., 15th St. N. W. Tracks, Racine, Wis.
 Akins Machine Co., Wm. C., 1 Gleason Pl., Rochester, N. Y.
 Akron-Belle Co., High & Chestnut Sts., Akron, O.
 Allen & Co., S. L., Fifth St. & Glenwood Ave., Philadelphia, Pa.
 Alloy Metal Stamping & Specialty Co., 444 N. 18th St., Philadelphia, Pa.
 Alloy Parts Mfg. Co., Canton, O.
 Alstet Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich.
 Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Aluminum Goods Mfg. Co., 15th & Franklin Sts., Manitowoc, Wis.
 Amco—See Shaw Co.
 American Automatic Products Corp., 865 N. Sangamon St., Chicago, Ill.
 American Brass Co., Waterbury, Conn.
 (See page 161.)
 American Brass Novelty Co., Grand Haven, Mich.
 American Brass Products Co., Pottstown, Pa.
 American Motor Body Co., 1800 Lehigh Ave., W. Philadelphia, Pa.
 American Nut & Bolt Fastener Co., 3 Ontario St., Pittsburg, Pa.
 American Pulley Co., 4200 Wissahickon Ave., Philadelphia, Pa.
 American Safety Lamp & Mine Supply Co., 1321 Capouse Ave., Scranton, Pa.
 American Spring & Mfg. Corp., Holly, Mich.
 American Tube Co., 3704 S. Rockwell St., Chicago, Ill.
 American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.
 Ansonia Mfg. Co., Ansonia, Conn.
 Arrow Motor & Machine Co., 727-39 Freylinghuysen Ave., Newark, N. J.
 Arrow Tool & Mfg. Co., 220 Cannon St., Bridgeport, Conn.
 Ashley Machine Works, 721 University Ave., Rochester, N. Y.
 Atlas Metal Stamping Co., 61 Navy St., Brooklyn, N. Y.
 Atlas Mfg. Co., 125 Water St., New Haven, Conn.

Auto Brass Mfg. Co., 3514-20 S. Michigan Ave., Chicago, Ill.
 Auto Parts Mfg. Co., 1815 Trombly Ave., Detroit, Mich.
 Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich.
 B. J. Stamping Co., 1435 Dorr St., Toledo, O.
 B. & S. Mfg. Co., 891 Cypress Ave., Brooklyn, N. Y. "XL."
 B. & W. Tool & Die Co., 102 St. Clair Ave., N. W., Cleveland, O.
 Babson-Dow Mfg. Co., 60 Fulda St. (Roxbury), Boston, Mass.
 Badger Corrugating Co., 214-16 S. Second St., La Crosse, Wis.
 Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.
 Barnes Co., Wallace, Bristol, Conn.
 Bassick Co., Bridgeport, Conn.
 (See page 311.)
 Baum's Metal Specialties Co., 1022 Wyandotte St., Kansas City, Mo.
 Bay State Stamping Co., 380 Chandler St., Worcester, Mass.
 Beaver Machine & Tool Co., 625-48 N. Third St., Newark, N. J.
 Becco—See Michigan Motor Specialties Co.
 Benjamin Electric Mfg. Co., 806 W. Washington Blvd., Chicago, Ill.
 (See pages 177 and 809.)
 Bersted Forming Tool Co., 765 Mather St., Chicago, Ill.
 Best Stove & Stamping Co., 145 E. Atwater St., Detroit, Mich.
 Betco—See Blodgett Engineering & Tool Co.
 Bettcher Stamping & Mfg. Co., 3106 W. 61st St., Cleveland, O.
 Bilton Machine Tool Co., Bridgeport, Conn. (See page 559.)
 Blair Tool & Machine Works, 521 Greenwich St., New York, N. Y.
 Blickman, S., Nelson Ave. & Mount St., Long Island City, N. Y.
 Blodgett Engineering & Tool Co., 14th & Dalgelle Sts. (Roosevelt Park), Detroit, Mich. "Betco."
 Board, Edward, Seventh & Wood Sts., Philadelphia, Pa.
 Bossert Corp., Utica, N. Y.
 Boston Pressed Metal Co., 171-73 Union St., Worcester, Mass.
 Boston Tool & Mfg. Co., 262 Dover St., Boston, Mass.
 Bowen Products Corp., Auburn, N. Y.
 (See page 313.)
 Bowen Products Corp. (Winkley Division), 2760 W. Warren Ave., Detroit, Mich.
 Brasco Mfg. Co., 5025-35 S. Wabash Ave., Chicago, Ill.
 Bremner & Terris Mfg. Co., 137-41 S. Albany Ave., Chicago, Ill.
 Brewer Tichener Corp., Cortland, N. Y.
 Bridgeport Silverware Mfg. Corp., 65 Holland St., Bridgeport, Conn.
 Brill Co., J. G., 62nd St. & Woodland Ave., Philadelphia, Pa.
 Bristol Industries, Inc., Woolworth Bldg., New York, N. Y.
 Browne Mfg. Co., W. G., Kingston, N. Y.
 Budd-Ranney Engineering Co., 44 E. Chestnut St., Columbus, O.
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Burgess-Norton Mfg. Co., Dept. D., 532-44 Peyton St., Geneva, Ill. (See page 627.)
 Candler Radiator Co., 1084-86 Jefferson Ave., Detroit, Mich. (See page 687.)
 Canton Metal Ceiling Co., 2100 Harrison Ave., Canton, O.
 Carde Stamping & Tool Co., West Side, Saginaw, Mich.

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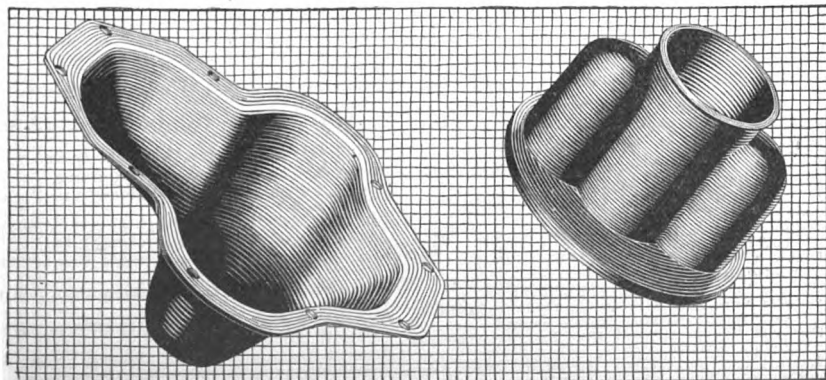
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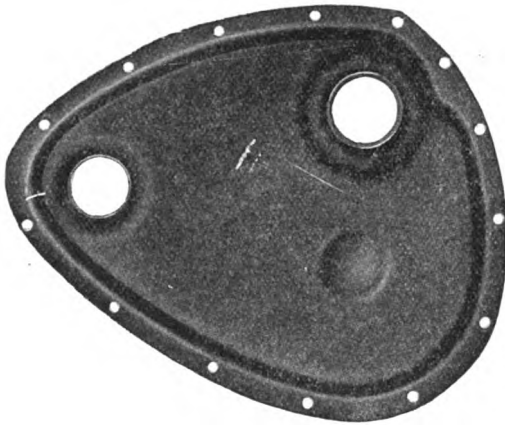


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- Carl Sons Chas. W., Coles St., Trenton, N. J.
Cary Spring Works, 240-42 W. 29th St., New York, N. Y.
Case Mfg. Co., 214-16 N. Mechanic St., Jackson, Mich.
Casey-Hudson Co., 361 E. Ohio St., Chicago, Ill. (See pages 607 and 741.)
Casady-Fairbank Mfg. Co., 6126 S. La Salle St., Chicago, Ill.
Central Machine Works, 1911 N. 12th St., St. Louis, Mo.
Central Machine Works, 19 Church St., Worcester, Mass.
Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
Chicago Die & Specialty Co., 553 W. Monroe St., Chicago, Ill.
Chicago Fuse Mfg. Co., Chicago, Ill. (See page 399.)
Chicago Tool Co., 542 W. Jackson Blvd., Chicago, Ill.
Cinch Fastener Corp., 2339 W. Van Buren St., Chicago, Ill. (See page 367.)
Circle Stamping & Mfg. Co., 241-45 Cortland St., Belleville, N. J.
City Iron Works & Machine Co., 520 S. Delaware Ave., Philadelphia, Pa.
Clark-Cadle-Harmon Corp., 1139 University Ave., Rochester, N. Y.
Clayton & Lambert Mfg. Co., 10567 Knodell Ave., Detroit, Mich. (See page 471.)
Cleesattel & Sons, Wm., 157-61 Walden Ave., Buffalo, N. Y.
Cleveland Heater Co., 1900 W. 112th St., Cleveland, O.
Cleveland Metal Stamping Co., 3110 Payne Ave., Cleveland, O.
Cleveland National Machine Co., 1366 W. 70th St., Cleveland, O.
Cleveland Wrought Products Co., W. 58th St., South of Denison, Cleveland, O.
Cochran Piston Corp., Moffatt Bldg., Detroit, Mich.
Coin Device & Signal Co., 409 Eighth Ave., New York, N. Y.
Colonial Stamping Co., Brill St. & Morris Canal, Newark, N. J.
Colson Co., Elyria, O.
Columbia Metal Stamping Co., 1540 E. 49th St., Cleveland, O.
Cooney-Dunn Co., 72 Grand St., New York, N.Y. (See page 845.)
Cornwall Mfg. Co., Cleveland, O.
Crosby Co., Buffalo, N. Y. (See page 813.)
Crowe Name Plate & Engraving Co., 1749 Grace St., Chicago, Ill.
Custer Pressed Steel Wheel Co., Bradford, Pa.
D. & D. Machine & Tool Co., 16-20 Jefferson Ave., Elizabeth, N. J.
Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.
Dall Steel Products Co., Hosmer & Main Sts., Lansing, Mich.
Dawson Mfg. Co., 2012 Larrabee St., Chicago, Ill. (See page 311.)
Deep Drawn Metal Corp., 195 Plymouth St., Brooklyn, N. Y.
Delphie Specialty Mfg. Co., 435-37 E. Willis Ave., Detroit, Mich.
Derby Coppersmithing & Sheet Metal Contracting Co., Derby, Conn.
De Sta Co.—See Detroit Stamping Co.
Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.
Detroit Pressed Steel Co., Detroit, Mich. (See page 943.)
Detroit Stamping Co., 3445-59 W. Fort St., Detroit, Mich. "De Sta Co."
Dewes Co., A., 199 Lafayette St., New York, N. Y.
Diamond Stamping Works Co., 5400 Windsor Ave., Cleveland, O.
Disston & Sons, Henry, (Tacony), Philadelphia, Pa.
Dorchester Machine & Tool Works, 70 Freeport St. (Dorchester), Boston, Mass.
Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
Dover, George W., 1012 Eddy St., Providence, R. I.
Duplex Machine Co., 93 Lafayette St., Newark, N. J.
Efemco—See Foster, Merriam & Co.
Elser Mfg. Co., 15 Elser Terrace, Rochester, N. Y.
Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.
Empire Art Metal Co., College Point, N. Y.
Empire Machine & Stamping Co., Buffalo, N. Y.
England Mfg. Co., 5914 Federal Ave., Detroit, Mich.
Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
Enterprise Mfg. Co., Bowery & Center Sts., Akron, O.
Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for McCord Stampings.) (See page 113.)
Everready Mfg. Co., 9 Knapp St., Boston, Mass.
Excelsior Tool & Mfg. Co., 96-98 Fulton St., New York, N. Y.
Faries Mfg. Co., 624 N. Union St., Decatur, Ill.
Federal Equipment & Supply Co., 398 Broadway, New York, N. Y.
Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis.
Fenton Machine Tool & Die Co., Fenton, Mich. (See page 327.)
Fernald Mfg. Co., North East, Pa. (See page 75.)
Ferro Stamping & Mfg. Co., Detroit, Mich. (See page 540.)
Fischer Spring Co., Chas., 473 Kent Ave., Brooklyn, N. Y.
Flour City Ornamental Iron Co., Minneapolis, Minn.
Forg Mfg. Co., Peter, 50 Park St., Somerville, Mass.
Forsyth Bros. Co., Harvey, Ill. (See page 949.)
Forsyth Metal Goods Co., Elm St., East Aurora, N. Y.
Foster, Merriam & Co., Meriden, Conn. "Efemco," "Full-a-Pep." (See page 711.)
Fostoria Pressed Steel Co., Fostoria, O. (See page 377.)
Fox Co., Gustave, 411-13 Race St., Cincinnati, O.
Frankford Machine Co., 4999 Frankford St., Philadelphia, Pa.
Ful-A-Pep—See Foster, Merriam & Co.
Galesburg-Coulter Disc Co., Galesburg, Ill.
Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa.
Geer Machine Works, Wm. E., 112 Summit Lane (East Liverpool), Liverpool, O.
Gem Mfg. Co., Goebel & Fulton Sts., Pittsburgh, Pa.
Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
General Metals Co., 6189 Greenwood Ave., Detroit, Mich.
General Stamping & Mfg. Works, 1653 W. Belmont Ave., Chicago, Ill.
Geometric Stamping Co., Cleveland, O.

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Detroit Office, 1201 Ford Bldg.

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Gander, Paeschke & Frey Co., 1865-1700 St. Paul Ave., Milwaukee, Wis.
(See page 843.)

Globe Machine & Stamping Co., Cleveland, O. (See page 155.)

Grand Rapids Brass Co., 90 Scribner Ave., N. W., Grand Rapids, Mich.

Great Lakes Forge Co., 14 E. Jackson Blvd., Chicago, Ill. (See page 389.)

Great Lakes Pressed Steel Corp., 1400 Niagara St., Buffalo, N. Y.

Greer, Frederic, 2437 Michigan Ave., Chicago, Ill.

Greist Mfg. Co., New Haven, Conn.
(See page 559.)

Griscom-Russell Co., Massillon, O.

Guyot Bros., Attleboro, Mass.

H. K. Metal Products Co., 60 Grand St., New York, N. Y.

H. & D. Co., Crawfordsville, Ind.

H. L. G. Mfg. Co., 29th St. & Canal, Indianapolis, Ind.

Hagstrom Model & Tool Works, 1628 Grand Ave., Kansas City, Mo.

Hammarlund Mfg. Co., 144-46 W. 18th St., New York, N. Y.

Hanney Stamping Works, 3102 Woodbridge St., Detroit, Mich.

Hardy Mfg. Co., Pendleton, Ind.
(See page 369.)

Harker Mfg. Co., 121-23 W. Third St., Cincinnati, O.

Harry Bros. Mfg. Co., 1302 E. Woodbridge St., Detroit, Mich.

Hart Machine & Tool Co., 364 Atlantic Ave., Boston, Mass.

Harvey Mfg. Co., 1862 State St., Bridgeport, Conn.

Harwich Stamping Co., Miller Rd. & S. Thayer St., Detroit, Mich.

Hastings Mfg. Co., 36 E. Mill St., Hastings, Mich. (See page 521.)

Hayes-Ionia Co., Seventh St. & Muskegon Ave., Grand Rapids, Mich.

Hayes Mfg. Co., 4525 Maybury Grand Ave., Detroit, Mich.

Henry Mfg. Co., G. J., 3263-70 W. Grand Ave., Chicago, Ill.

Higgin Mfg. Co., Newport, Ky.

Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.

Hill Co., Geo. Q., 32-34 Dorchester Ave., Boston, Mass.

Hoeft & Co., 400 N. Ashland Ave., Chicago, Ill.

Hotchkiss Metal Form Co., 16 Jarvis St., Binghamton, N. Y.

Howes Co., S. M., 42 Union St., Boston, Mass.

Hub Engineering & Machine Co., Hamilton St., Bound Brook, N. J.

Hubbard Spring Mfg. Co., Pontiac, Mich.
(See page 798.)

Hugh Co., 163 Adams St., Buffalo, N. Y.

Hydraulic Pressed Steel Co., of the Hydraulic Steel Co., Cleveland, O.

Hyman & Co., Henry, 476 Broadway, New York, N. Y.

Iles Mfg. Co., E. W., Shelton, Conn.

Indestructible Wheel Co., Lebanon, Ind.

Indianapolis Pressed Steel Co., 2044 N. Rural St., Indianapolis, Ind.

Industrial Electric Mfg. Co., 139 Beaubien St., Detroit, Mich.

Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

International Auto Parts Co., 16th & Wood Sts., Philadelphia, Pa.

International Metal Stamping Co., Artillery & Muster Aves., Detroit, Mich.

International Steel Products Co., Hartford, Wis.

Ireland & Matthews Mfg. Co., Beard & Chatfield Sts., Detroit, Mich.

Iroquois Tool & Stamping Co., 909-17 Genesee St., Buffalo, N. Y.

Jambor Mfg. Co., 911 Center St., Milwaukee, Wis.

Johnson Mfg. Co., 108 N. Front St., Philadelphia, Pa.

Kales Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich.

Kameco Corp., 84 Barclay St., New York, N. Y.

Kanters Stamping & Mfg. Co., Shaw Ave. & 133rd St., Cleveland, O.

Keeler Brass Co., 251-71 Godfrey Ave., Grand Rapids, Mich.

Keyless Lock Co., 1401 Newman St., Indianapolis, Ind.

Keystone Production & Mfg. Co., 1835 W. 22d St., Chicago, Ill.

Kickhaefer Mfg. Co., Dept. A., 359-71 Reed St., Milwaukee, Wis.
(See page 807.)

Kirk & Blum, 2346 Spring Grove Ave., Cincinnati, O.

Kuchen Specialty Mfg. Co., Elm & Reed Sts., Reading, Pa.

Klein, Adolph, 174 Center St., New York, N. Y.

Klopping, A. C., 1878 Norwood Ave., Toledo, O.

Knowles Tool Mfg. Co., 125 N. Webster St., Dayton, O.

Koehler Mfg. Co., Marlboro, Mass.

Konigslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.

Krebs Mfg. Co., 341 E. Ohio St., Chicago, Ill.

L. & L. Mfg. Co., 134 High St., Newark, N. J.

La Crosse Hinge & Lock Co., 907 S. Front St., La Crosse, Wis.

Lansing Stamping Co., Lansing, Mich.
(See page 811.)

Larson Tool & Stamping Co., Olive St., Attleboro, Mass.

Lawson Co., F. H., Dept. D, Cincinnati, O. (See page 377.)

Lazarides Mfg. Co., 56 Beekman St., New York, N. Y.

Lehigh Engineering Co., Rogersford, Pa.

Levy, Benj., 355 W. Broadway, New York, N. Y.

Liberty Metal Spinning Works, 180 Centre St., New York, N. Y.

Liberty Tool & Gauge Works, 328 Bernon St., Woonsocket, R. I.

Lidseen, Gustave, 832-40 S. Central Ave., Chicago, Ill.

Lima Sheet Metal Products Co., 308 E. Wayne St., Lima, O.

Lindholm Metal Stamping Co., 107-15 Erie St., Camden, N. J.

Light Tool & Stamping Co., 1723 E. 37th St., Cleveland, O.

Lightwell Steel Sash Co., Newport, Del.

Lynn Machine & Screw Co., 496 Washington St., Lynn, Mass.

McCall Machine Works, 574 Lyell Ave., Rochester, N. Y.

McCord & Co., 122 S. Michigan Ave., Chicago, Ill.

McCully, R. P. & C. H., 331-35 Van Buren St., Brooklyn, N. Y.

McCord Mfg. Co., Detroit, Mich.
(See page 409.)

McDowell Mfg. Co., Millvale Sta., Pittsburgh, Pa.

Maforco—See Market Forge Co.

Mail O Meter Co., 3469 E. Jefferson St., Detroit, Mich.

Mann Corp., Kankakee, Ill.

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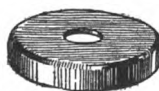


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- Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.
- Mantle & Co., 1907 Park Ave., New York, N. Y.
- Market Forge Co., Garvey St. & Blvd., Everett, Mass. "Mafoeco."
- Mars Mfg. Co., 13th St. & Second Ave. (S. Brooklyn), Brooklyn, N. Y.
- Maryland Metal Products Co., Hagerstown, Md.
- Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 933.)
- Mattatuck Mfg. Co., 100 Southmayd St., Waterbury, Conn.
- Matthews Mfg. Co., 104 Gold St., Worcester, Mass.
- Matthews Mfg. Co., H. A., Seymour, Conn.
- Mayer Co., Geo. J., 36 S. Meridian St., Indianapolis, Ind.
- Mead & Cross Co., 309 Lafayette St., New York, N. Y.
- Merwin Mfg. Co., 310-20 E. 19th St., Erie, Pa.
- Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
- Metal Goods Mfg. Co., 566 Commercial St., Boston, Mass.
- Metal Parts Mfg. Co., 1084 E. 152nd St., Cleveland, O.
- Metal Products Mfg. Co., 241-43 W. 23rd St., New York, N. Y.
- Metal Specialty Co., 1529-33 W. Sixth St., Cincinnati, O.
- Meyers Co., W. F., 13th & J Sts., Bedford, Ind.
- Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
- Michigan Forge & Tool Co., 7360 Richmond Ave., Detroit, Mich.
- Michigan Metal Spinning Mfg. Co., 2130-34 E. Woodbridge St., Detroit, Mich.
- Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
- Michigan Pressed Steel Co., 126 S. Artillery Ave., Detroit, Mich.
- Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.
- Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich.
- Milwaukee Metal Working Co., 382-88 Clinton St., Milwaukee, Wis.
- Mirrorscope Co., E. 168th St. & Waterloo Rd., Cleveland, O.
- Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
- Modern Tool & Mfg. Co., 121 Opera Pl., Cincinnati, O.
- Moline Pressed Steel Co., Fifth St., East Moline, Ill.
- Monarch Stamping Co., Chappaqua, N. Y.
- Monarch Tool & Mfg. Co., 118-22 Opera Pl., Cincinnati, O.
- Moore & Co., 301 W. Grand Ave., Chicago, Ill.
- Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
- Morrison & Sons, Frank, 1320 W. 11th St., Cleveland, O.
- Morton Mfg. Co., 5133-39 W. Lake St., Chicago, Ill. (See page 911.)
- Mossberg Co., Frank, Attleboro, Mass.
- Motor Products Corp., 11801 Mack Ave., Detroit, Mich. (See page 757.)
- Motor Wheel Corp. (Gler Pressed Steel plant), Lausaug, Mich. (See Front Cover and page 803.)
- Motor Parts Machine Co., 645-49 S. Pierce St., Milwaukee, Wis.
- Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
- Mt. Vernon Metal Products Co., Third Ave. & Seventh St., Mt. Vernon, N. Y.
- Mullins Body Corp., 182 Franklin Ave., Salem, O.
- Murray Auto Parts Mfg. Co., Atlanta, Ga.
- Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
- National Engineering Co., Broad & Chestnut Sts., Philadelphia, Pa.
- National Metal Products Co., 1016 E. 11th St., Indianapolis, Ind.
- National Metal Stamping & Mfg. Co., Mulberry & Murray Sts., Newark, N. J.
- National Metalware Co., 92-98 Bogart St., Brooklyn, N. Y.
- National Stamping & Electric Works, 410-36 Clinton St., Chicago, Ill.
- National Steel Products Co., 1611-21 Crystal Ave., Kansas City, Mo.
- Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
- Nelson Tool Co., 782 E. 142d St., New York, N. Y.
- New Britain Machine Co., Chestnut St., New Britain, Conn.
- New England Pressed Steel Co., Washington Ave., Natick, Mass.
- Newton Mfg. Co., Plainville, Conn. (See page 315.)
- Niagara Brass Mfg. Co., Lockport, N. Y.
- Niagara Metal Stamping Corp., 235-47 Tenth St., Niagara Falls, N. Y.
- Niagara Machine Works, 1387 Niagara St., Buffalo, N. Y.
- North Star Specialty Co., 1834 University Ave., St. Paul, Minn.
- Northwestern Machine Corp., 2621 N. 22d St., St. Louis, Mo.
- Oakes Co., Indianapolis, Ind. (See page 360.)
- Oliver Metal Stamping Co., 217-23 W. Illinois St., Chicago, Ill.
- Pandolfo Mfg. Co., St. Cloud, Minn.
- Parish Mfg. Co., Reading, Pa.
- Parish & Bingham Corporation, Cleveland, O. (See page 242.)
- Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.
- Patton-MacGuyer Co., 31 Mathewson St., Providence, R. I.
- Pawtucket Mfg. Co., 327 Pine St., Pawtucket, R. I.
- Pearce Co., Fred'k., 18-20 Rose St., New York, N. Y.
- Peerbloow Mfg. Co., Leetsdale, Pa.
- Perfect Window Regulator Co., 20 Exchange Pl., New York, N. Y.
- Perfection Metal Products Co., College Point, N. Y.
- Pheoli Mfg. Co., 5750 W. Roosevelt Rd., Chicago, Ill.
- Phillips & Co., H., 904-10 Evans St., Cincinnati, O.
- Phoenix Mfg. Co., Grand River at Loraine, Detroit, Mich. (See page 725.)
- Plum & Little, 30 N. Water St., Rochester, N. Y.
- Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass. (See page 800.)
- Powell Pressed Steel Co., Hubbard, O. (See page 949.)
- Pratt Chuck Co., Frankfort, N. Y.
- Precision Metal Workers, 3100-12 Carroll Ave., Chicago, Ill.
- Pressed Steel Car Co., 307 Fifth Ave., Pittsburgh, Pa.
- Pressed Steel Co., Luzerne St., Wilkes-Barre, Pa.
- Presteel Co., Grafton, O.
- Producers' Machine & Specialty Corp., 61-65 Elizabeth St., Rochester, N. Y.
- Progressive Tool Mfg. Co., Fifth St., Beloit, Wis.

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Quinsigamond Pressed Steel Co., 63 Jackson St., Worcester, Mass.
 R. P. K. Pressed Metal Co., Bridgeport, Conn.
 Raymond Engineering Corp., 307 Lafayette St., New York, N. Y.
 Recording Devices Co., 584 W. Fifth St., Dayton, O.
 Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.
 Reliance Metal Spinning & Stamping Co., 160 John St. Brooklyn, N. Y.
 Reynolds Engineering Co., First St. & Third Ave., Moline, Ill.
 Rochester Pressed Steel Co., 35-37 Ford St., Rochester, N. Y.
 Rome Mfg. Co., Railroad St., Rome, N. Y.
 Royal Machine & Foundry Co., 388-90 Division St., Oshkosh, Wis.
 S. A. Machine Co., 2114 E. Woodbridge St., Detroit, Mich.
 S. & H. Machine & Tool Co., 23 Elizabeth St., Albany, N. Y.
 S. & Y. Co., 55-57 Governor St., Springfield, Mass.
 Saginaw Stamping & Tool Co., ft. Williamson St., Saginaw, Mich.
 Savage Arms Corp., Sharon, Pa.
 Saxon Mfg. Co., 1034-40 Grand Ave., Toledo, O.
 Schroeder Bros. Mfg. Co., 110 Brook St., Torrington, Conn.
 Scott & Fetzner Machine Co., Locust Ave., Cleveland, O.
 Seovill Mfg. Co., Waterbury, Conn.
 (See page 745.)
 Seavey Machine Works, Eugene, 359 Pearl St. New York, N. Y.
 Seiss Mfg. Co., Phillips Ave. & N. Y. C. Ry., Toledo, O.
 Sessions & Son, J. H., Riverside Ave., Bristol, Conn.
 Shapiro & Aronson, 20 Warren St., New York, N. Y.
 Sharon Pressed Steel Co., Sharon, Pa.
 (See page 391.)
 Shavv Mfg. Co., 1 Columbia St., Lynn, Mass.
 (See page 367.)
 Shawmut Iron & Wire Works, 97 Tilleston St., Everett, Mass.
 Sheet Steel Products Co., Michigan City, Ind.
 (See page 179.)
 Shonk Works, Maywood, Ill.
 Shunk Mfg. Co., Bucyrus, O.
 Simplex Stamping Co., 367 Ellicott St., Buffalo, N. Y.
 Simplex Steel Stamping Co., 1926-28 Gravois Ave., St. Louis, Mo.
 Simplex Tool Co., Social St., Woonsocket, R. I.
 Slick-Knox Steel Co., Sharon, Pa.
 Smith Co., Thomas, 13 Cypress St., Worcester, Mass.
 Smith Corp., A. O., Milwaukee, Wis.
 (See page 435.)
 Smith Mfg. Co., W. F., 157 Stratford Ave., Bridgeport, Conn.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y.
 Special Machinery Co., 40 Rimer St., Bridgeport, Conn.
 Specialty Products Co., 286 South St., Newark, N. J.
 Sperry Gyroscope Co., Manhattan Bridge Plaza, Brooklyn, N. Y.
 Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y.

Stamping & Tool Co., Third & Cass Sts., La Crosse, Wis.
 Standard Die Casting Co., 600 S. Pierce St., Milwaukee, Wis.
 Standard Mfg. Co., Shelby, O.
 Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
 Standard Metal Spinning Co., 133 Mott St., New York, N. Y.
 Standard Pressed Steel Co., Philadelphia, Pa.
 Standard Separator Co., 45th St. & Burnham Rd., Milwaukee, Wis.
 Standard Tool & Mfg. Co., 512-24 E. Lafayette Blvd., Detroit, Mich.
 (See page 579.)
 Stanley Works, (Special Productions Dept.), New Britain, Conn.
 (See page 783.)
 Stauffer & Son, P. S., 63 Governor St., Springfield, Mass.
 Stearns Stamping Co., W. H., 34 Southbridge St., Worcester, Mass.
 Steel Furniture Co., 1480 Buchanan Ave., S. W. Grand Rapids, Mich.
 Steger & Sons Piano Mfg. Co. (Industrial Division), Steger, Ill.
 Steinen & Co., Wm., 279 Washington St., Newark, N. J.
 Stephens Nut & Bolt Co., Main & Crawford Sts., Pawtucket, R. I.
 Sterling Tool & Mfg. Co., 495 Broadway, Milwaukee, Wis.
 Stewart-Skinner Co., 17 Green St., Worcester, Mass.
 Stillman, A. P., 805-09 Lexington Ave., Brooklyn, N. Y.
 Stimpson Co., Edwin B., 70 Franklin Ave., Brooklyn, N. Y.
 Superior Metal Products Co., Elyria, O.
 (See page 809.)
 Superior Seal & Stamp Co., 151 E. Jefferson Ave., Detroit, Mich. (See page 813.)
 Superior Tool & Mfg. Co., 3 Reeves St., Worcester, Mass.
 Supreme Machine & Tool Works, 4085 Park Ave., New York, N. Y.
 Sutterley & Co., G. T., 1723 N. Second St., Philadelphia, Pa.
 Syracuse Metal Products Corp., 316 Madison St., Syracuse, N. Y.
 Syracuse Stamping Co., 423 West Ave., Syracuse, N. Y.
 T. & D. Mfg. Co., 207 Canal St., New York, N. Y.
 Taylor-Shantz Co., 478 St. Paul St., Rochester, N. Y.
 Tiffin Art Metal Co., Tiffin, O.
 Toledo Bridge & Crane Co., Toledo, O.
 Toledo Steel Barrel Co., Toledo, O.
 Tool & Machine Products Co., Waldo St., Newark, O.
 Torrington Mfg. Co., 70 Franklin St., Torrington, Conn.
 Transue & Williams Steel Forging Corp., Alliance, O. (See page 805.)
 Troy Body Co., Crawford St., & Big Four Ry., Troy, O.
 Trumbull, F. S., Bishop & Conn. Aves., Bridgeport, Conn.
 Truscon Steel Co., Albert St., Youngstown, O.
 Turner Novelty Co., John C., Dayton, O.
 United Manufacturing & Distributing Co., Lake Shore Drive & Ohio St., Chicago, Ill.
 U. S. Pressed Steel Co., Stewart St., Ypsilanti, Mich.
 Up-To-Date Machine Works, 2915 Wabash Ave., Chicago, Ill. (See page 735.)
 Varley Mfg. Co., Findlay, O.
 Viking Tool & Machine Co., 56th St. bet. Seventh & Eighth Aves., Brooklyn, N. Y.

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STAMPINGS and PRESSINGS, Metal (Continued)

Vogel & Bros., Wm., 37 S. Ninth St., Brooklyn, N. Y.
Wagner Mfg. Co., E. R., North Milwaukee, Wis.
Walker Body Co., Amesbury, Mass.
Wallace & Henry, 241-43 W. 23rd St., New York, N. Y.
Walsham Co., Josiah, 48 Dudley St., Providence, R. I.
Ware Bros. Automatic Products, 224 N. Ada St., Chicago, Ill.
Waterbury Brass Goods Corp., 160 Washington Ave., Waterbury, Conn.
Waterbury Screw & Specialty Co., 660-80 Cooke St., Waterbury, Conn.
Weber-Knapp Co., Jamestown, N. Y.
Wemco—See Western Metal Specialty Co.
West Michigan Machine Tool Co., 231 Ionia Ave., Grand Rapids, Mich.
Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)
Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemco."
Western Screw Products Co., St. Louis, Mo. (See page 749.)
Wheeler Reflector Co., 156 Pearl St., Boston, Mass.
Wheeler & Son, Frank, 55 Stone St., Meriden, Conn.
White-Quehl Mfg. Co., 427 E. Pearl St., Cincinnati, O.
Wickwire-Spencer Steel Corp., Worcester, Mass. (See page 794.)
Wilcox Pressed Steel Co., 1713-35 Armitage Ave., Chicago, Ill.
Wilson Body Co., C. R., 1600 Clay Ave., Detroit, Mich.
Winter Stamping Co., Goshen, Ind.
Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)
Worcester Stamped Metal Co., Worcester, Mass. (See page 811.)
XL—See B & S Mfg. Co.
York Corrugating Co., York, Pa. (See page 377.)
Youngstown Pressed Steel Co., Youngstown, Ohio.
Zeldler Co., William A., 182 Locust St., New York, N. Y.
Zenite Metal Co., 201-05 N. West St., Indianapolis, Ind. (See page 595.)

STAMPS, Steel

(For numbering or lettering Parts)

Baird Equipment Co., 324 W. Ohio St., Chicago, Ill.
Becker Engraving Co., August, 247 Atlantic Ave., Boston, Mass.
Bloch Metal Stamping Co., 88-90 Walker St., New York, N. Y.
Brookes & Co., E. J., 237 Fulton St., New York, N. Y.
Childs & Co., S. D., 136 S. Clark St., Chicago, Ill.
Hanson Co., C. H., 178 N. Clark St., Chicago, Ill.
Hoggson & Pettis Mfg. Co., 141 Brewery St., New Haven, Conn.
Kauts & Co., Fred C., 2633-35 W. Lake St., Chicago, Ill.
Keene, Fred H., 152 Chambers St., New York, N. Y.
Knight & Son, H. W., Seneca Falls, N. Y.
McNamara, M., 85 Nassau St., New York, N. Y.

Matthews & Co., Jas. H., 1537 Forbes Field, Pittsburgh, Pa.
Mayer Co., Geo. J., 36 S. Meridian St., Indianapolis, Ind.
Mulhaupt, F. Jos., 227 N. Fifth St., Lafayette, Ind.
Murdock Co., W. James, 116 Opera Pl., Cincinnati, O.
Ness, Jr., Geo., M., 61 Fulton St., New York, N. Y.
New York Stencil Works, 100 Nassau St., New York, N. Y.
Noble & Westbrook Mfg. Co., 9 Asylum St., Hartford, Conn.
Pannier Bros. Stamp Co., 207-08 Sandusky St., Pittsburgh, Pa. (See page 813.)
Patent Die & Stencil Works, 65-71 Broadway, Astoria, N. Y.
Pittsburgh Stamp Co., 314 Penn Ave., Pittsburgh, Pa.
Schoder & Lombard Co., 202-04 Centre St., New York, N. Y. "Salco Master."
Salco Master—See Schoder & Lombard Co.
Schwerdtle Stamp Co., 45 Cannon St., Bridgeport, Conn.
Superior Seal & Stamp Co., 151 E. Jefferson Ave., Detroit, Mich. (See page 813.)
Walter & Sons, N. C., 3 Park Row, New York, N. Y.

STAMPS, Time

Automatic Time Stamp Co., 163 Congress St., Boston, Mass.
Calculagraph Co., 30 Church St., New York, N. Y.
Cosmo—See Joslin Mfg. Co.
Eclipse—See Joslin Mfg. Co.
Follett Time Recording Co., 9-11 W. Broadway, New York, N. Y.
Hoggson & Co., S. H., Thames Bldg., New York, N. Y.
Joslin Mfg. Co., A. D., 223-25 W. Erie St., Chicago, Ill. "Cosmos," "Eclipse."
Kastens, Henry, 419½ W. 27th St., New York, N. Y. (See page 255.)

STANDARD BOXES—See Boxes, Standard and Curb

STANDS, AXLE, FOR FORDS—See Stands, Rear Axle

STANDS, BURNING IN—See Stands, Engine Repair.

STANDS, Electric Test

(For testing, starting and lighting equipment)

Armature Rewinding Co., 3537 Bell Ave., St. Louis, Mo. (See page 955.)
Auto Electric Repair Co., 1336 Michigan Ave., Chicago, Ill.
Auto Electric Sales Co., 2953 Hennepin Ave., Minneapolis, Minn.
Becker Bros., 23-31 N. Jefferson St., Chicago, Ill.
Cowie Electric Co., E. S., Kansas City, Mo. (See page 481.)
Electric Machine Co., 329 W. Ohio St., Indianapolis, Ind. "Elmco."
Elmco—See Electric Machine Co.
J. & B. Mfg. Co., Pittsfield, Mass.
Klemmer Bros. & Co., 128 W. Bridge St., Owatonna, Minn. "M. G. S."
M. G. S.—See Klemmer Bros. & Co.

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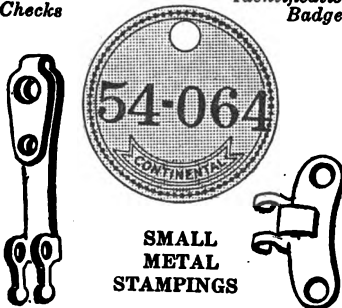
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Pittsburgh, Penna.

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STANDS, Electric Test (Continued)

Nichoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. (See page 325.)
 Onan, David W., 1323 Penn Ave. N., Minneapolis, Minn.
 P-R Electric Starter Co., 7335 Vincennes Ave., Chicago, Ill.
 Quality Electric Products Co., 907 E. 15th St., Kansas City, Mo. (See page 481.)

STANDS, Electric Test, for Fords

(For testing, starting and lighting equipment)

F-B Electric & Mfg. Co.—See Fairbanks Co.
 Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.)
 (See pages 491 to 494.)
 Fleming & Miller, 29 Watson St., Detroit, Mich. "Motor City."
 Motor City—See Fleming & Miller.
 Nichoff & Co., Paul G., 232-42 E. Ohio St., Chicago, Ill. (See page 325.)

STANDS, Engine Repair

American—See Service Station Equipment Co.
 Brodrib Bros., 59 Congress St., Hartford, Conn.
 Buckeye—See Central Brass & Fixture Co.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Carswell-Hammond Mfg. Co.—See Zinke Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)
 Dolder Mfg. Co., Earlville, Ill.
 Eco—See Western Mfg. Co.
 Ekern-Turk Mfg. Co., Pipestone, Minn.
 Foundry Mfg. Co.—See International Purchasing Bureau.
 Haberkorn & Co., C. H., 1331 W. Elizabeth St., Detroit, Mich.
 Haco—See Hathorn Auto Co.
 Hathorn Auto Co., 109-11 First St., S. E., Mason City, Ia. "Haco."
 Herschell-Spillman Motor Co., North Tonawanda, N. Y.
 International Purchasing Bureau, 203 E. 15th St., New York, N. Y. (Sole Distributors for Foundry Mfg. Co., St. Albans, Vt.)
 Kund & Elben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa.
 Manley Mfg. Co., York, Pa. (See page 661.)
 Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich.
 Moak Machine & Tool Co., 2547 Connors St., Port Huron, Mich.
 O'Brien Mfg. Co., Broadway Bank Bldg., Denver, Col.
 Peerblow Mfg. Co., Leetsdale, Pa. "Rhedman."
 Portable Tool Supply Co., 256 Main St., Buffalo, N. Y.
 Rhedman—See Peerblow Mfg. Co.
 Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."
 Shewalter Mfg. Co., 1217 Phythian St., Springfield, O. "Universal."
 Storm Mfg. Co., 406 Sixth Ave. S., Minneapolis, Minn.
 Universal—See Shewalter Mfg. Co.

Van Trump-Eselbey Co., 1918 Cherry St., Philadelphia, Pa. "Veco."
 Veco—See Van Trump-Eselbey Co.
 Whaley & Co., Edward A., Princess Anne Ave. & Virginian Railroad, Norfolk, Va.
 Western Mfg. Co., Sixth Ave. E. & S. Third Sts., Okaloosa, Ia. "Eco."
 Wisconsin Welding & Cutting Co., 413 Sixth St., Milwaukee, Wis. (See page 821.)
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.)

STANDS, Engine Repair for Fords

(For Burned-In Machines—See Machines, Burned-In)

Amelung Mfg. Co., A. F., First St., Sanborn, Iowa.
 American—See Service Station Equipment Co.
 Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."
 Brochu, A. D., 5 Pavillion St., Hartford, Conn.
 Canedy-Otto Mfg. Co., Chicago Heights, Ill.
 Carswell-Hammond Mfg. Co.—See Zinke Co.
 Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)
 Danielson Tool Works, Fulton St., Wausau, Wis.
 Detroit Garage Equipment Co., 38 Hendrie St., Detroit, Mich.
 Dixie—See Southern Machine & Tool Co.
 Dyer Co., 155 Brookline St., Cambridge, Mass.
 Eco—See Western Mfg. Co.
 Economy Auto Supply Co., Denver, Colo. "O'Brien."
 Ekern-Turk Mfg. Co., Pipestone, Minn.
 K. & S.—See Water Street Garage & Machine Co.
 Kund & Elben Mfg. Co., 204-24 Warrington Ave., Pittsburgh, Pa.
 Manley Mfg. Co., York, Pa. (See page 661.)
 Miles Mfg. Co., Newton, Ia.
 Motax Mfg. Co., Taylorville, Ill.
 Nelson & Son, T. K., 606 Hill St., Harian, Ia.
 O'Brien—See Economy Auto Supply Co.
 Peoria—See Auto Mechanics Tool Co.
 Peerblow Mfg. Co., Leetsdale, Pa. "Rhedman."
 Railway Specialty Co., Atchison, Kans. "Rysco."
 Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kan.
 Rhedman—See Peerblow Mfg. Co.
 Rysco—See Railway Specialty Co.
 Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."
 Southern Machine & Tool Co., 3210 Locust St., St. Louis, Mo. "Dixie." (See page 870.)
 Spencer & Nelson, Lake View, Ia.
 Van Trump-Eselbey Co., 1918 Cherry St., Philadelphia, Pa. "Veco."
 Veco—See Van Trump-Eselbey Co.
 Water Street Garage & Machine Co., 723-30 Water St., South Brownsville, Pa. "K. & S."
 Western Mfg. Co., Sixth Ave. E. & S. Third St., Okaloosa, Ia. "Eco."
 Wilber Co., 2723 First Ave., S. Minneapolis, Minn.
 Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.)

Everything is listed under the NOUN or principal word

STANDS, Generator Holding

Durham Co., P. J., 244 W. 49th St., New York, N. Y.

STANDS, LIGHT—See Lights, Wash Stand**STANDS, Portable Tool**

Acme Sheet Metal & Mfg. Co., 2348 Lakeside Ave., Cleveland, O.

Champion—See Western Tool & Mfg. Co.

Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)

Dyer Co., 155 Brookline St., Cambridge, Mass.

Lupton's Sons Co., David-Allegheny Ave. and Tulip St., Philadelphia, Pa. (See page 677.)

M. & P.—See Messenger & Parks Mfg. Co.

Messenger & Parks Mfg. Co., Aurora, Ill. "M. & P."

New Britain Machine Co., Chestnut St., New Britain, Conn.

Portable Tool Supply Co., 256 Main St., Buffalo, N. Y.

Under Dog—See Walker Foundry Co.

Walker Foundry Co., 14th & Walnut Sts., Erie Pa. "Under Dog."

Western Tool & Mfg. Co., Springfield, O. "Champion."

STANDS, Radiator Repair

Automotive Radiator Machine Co., 628½ Central Ave., Fort Dodge, Ia. "Schulz."

Bear—See Reschke Machine Works Co.

Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)

Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)

Hardy Radiator & Motor Co., Little Rock, Ark.

International Radiator Co., 1507 S. Michigan Ave., Ottumwa, Ia.

Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans. "Bear."

Schulz—See Automotive Radiator Machine Co.

STANDS, Rear Axle Repair, for Fords

American—See Service Station Equipment Co.

Carswell-Hammond Mfg. Co.—See Zinke Co.

Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)

Danielson Tool Co., Fulton St., Wausau, Wis.

Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)

Eco—See Western Mfg. Co.

Miles Mfg. Co., Newton, Ia.

Nazett Mfg. Co., 1440 Washington St., Eldora, Ia.

Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."

Van Trump-Eselbey Co., 1918 Cherry St., Philadelphia, Pa. "Veco."

Veco—See Van Trump-Eselbey Co.

Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, N. J. (See page 661.)

Western Mfg. Co., Sixth Ave., E. & S. Third Sts., Oskaloosa, Ia. "Eco."

Wilber Co., 2723 First Ave. S., Minneapolis, Minn.

Wisconsin Welding & Cutting Co., 413 Sixth St., Milwaukee, Wis. (See page 821.)

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.)

STANDS, REPAIR—See Stands, Engine Repair; also Stands, Portable Tool; also Stands, Rear Axle Repair; also Stands, Radiator Repair**STANDS, Tire Building**

Akron-Williams—See Williams Foundry & Machine Co.

Davenport—See Sears Tire Equipment Co.

DeMattia Bros., River Rd. & Prescott Ave., Garfield, N. J.

Hibbs Rubber Co., 300 S. Boas St., Fort Worth, Tex.

I. X. L. Tire Builders Equipment Co., Peoria Life Bldg., Peoria, Ill.

Miller, Chas. E., 1460 S. Meridian St., Anderson, Ind.

P. I. W.—See Pechstein Iron Works.

Pechstein Iron Works, Ninth & Johnson Sts., Keokuk, Ia. "P. I. W."

Sears Tire Equipment Co., Davenport, Iowa. "Davenport." (See page 595.)

Williams Foundry & Machine Co., 100 Walnut St., Akron, O. "Akron-Williams."

STANDS, TOOL—See Stands, Portable Tool**STANDS, WASH STAND LIGHT—See Lights, Wash Stand****STAPLES, Insulated**

(Fibre insulated staples for our wiring)

Blake Signal & Mfg. Co., Boston, Mass. (See page 821.)

STARTER BRUSHES—See Brushes, Magneto, Starter and Generator**STARTER BUSHINGS—See Bushings, Starter or Primer Attaching****STARTER COILS—See Windings, Starter and Ignition****STARTER GEARS, AUTOMATIC—See Gears, Automatic Starter Transmission****STARTER REPAIR PARTS—See Parts, Magneto, Coil and Distributor****STARTER SWITCHES—See Switches, Electric Starter****STARTER WINDINGS—See Windings, Starter and Ignition****STARTERS, AIR—See Starters, Compressed Air****STARTERS, Compressed Air Engine**

Christensen Engineering Co., 425 E. Water St., Milwaukee, Wis.

Lipman Pump Works, 100 Shirland Ave., Beloit, Wis.

Smith, Irvin C., 1243 W. Pico St., Los Angeles, Cal.

STARTERS, Compressed Air Engine, for Fords

Air Device Co., 3975-77 Cottage Grove Ave., Chicago, Ill. "Ten Eyck."

Kellogg Mfg. Co., Rochester, N. Y.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)

Ten Eyck—See Air Device Co.

Everything is listed under the NOUN or principal word

STARTERS, COMPRESSED AIR TRACTOR

—See Starters, Tractor Compressed Air

STARTERS, Electric Engine

American Bosch Magneto Corp., (Brightwood) Springfield, Mass. "Bosch."
 Auto-Lite—See Electric Auto-Lite Corp.
 Bijur Motor Appliances Co., Hoboken, N. J. (See page 433.)
 Bosch—See American Bosch Magneto Corp.
 Dayton Engineering Laboratories Co., 329 E. First St., Dayton, O. "Delco."
 Delco—See Dayton Engineering Laboratories Co.
 Dyneto Electric Corp., Syracuse, N. Y.
 Electric Auto-Lite Corp., Toledo, O. "Auto-Lite."
 Huff—See Simms Magneto Co.
 L-N—See Leece-Neville Co.
 Leece-Neville Co., 6863 Hamilton Ave., Cleveland, O. "L-N."
 North East Electric Co., Rochester, N. Y.
 Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.
 Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J. "Huff."
 Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)

STARTERS, Electric Engine, for Fords

Dyneto Electric Corp., Syracuse, N. Y.
 Fisher Electrical Works, 1014 Lynn St., Detroit, Mich.
 Heinze-Springfield—See Service Products Co.
 Liberty Starter Co., 702 W. Jefferson Ave., Detroit, Mich.
 Liberty Starters Corp., 5 Columbus Circle, New York, N. Y.
 Pellet Magneto Co., 25th St. & Wabash Ave., Chicago, Ill.
 Service Products Co., Greenawalt Bldg., Springfield, O. "Heinze-Springfield."
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)

STARTERS, ELECTRIC ENGINE TRACTOR—See Starters, Tractor Electric Engine

STARTERS, Gasoline or Vapor Engine

(For Priming Devices—See Primers, Gasoline Engine)

Automatic Starter Co., 418 N. Third St., St. Louis, Mo.
 Brown-Maddock Co., West Newbury, Mass.
 Markham Co., W. D., Clarksdale, Miss.

STARTERS, Impulse

American Bosch Magneto Corp. (Brightwood), Springfield, Mass. "Bosch."
 Beehler Electrical Equipment Co., Yuma, Colo.
 Bosch—See American Bosch Magneto Corp.

Kingston—See Kokomo Electric Co.
 Kokomo Electric Co., 1460 N. Webster St., Kokomo, Ind. "Kingston."
 Lauraine Magneto Co., 13th St. & Ely Ave., Long Island City, N. Y.
 Pierce—See Warnock-Wirth Sales Co.
 Safety Impulse Starter Co., 325 N. 15th St., Philadelphia, Pa.
 Splittdorf Electrical Co., 98 Warren St., Newark, N. J.
 Veltum & Clow Mfg. Co.—See Warnock-Wirth Sales Co.
 Warnock-Wirth Sales Co., 616 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Veltum & Clow Mfg. Co., Eugene, Ore. "Pierce.")

STARTERS, LEVER ENGINE—See Starters, Manual

STARTERS, Manual, Pedal or Lever Engine

(See also Cranks, Safety Starting)

Pres-Toe—See Robertson Machine & Foundry Co.
 Robertson Machine & Foundry Co., W., Buffalo, N. Y. "Pres-Toe."

STARTERS, Manual, Pedal or Lever Engine, for Fords

American Simplex Co., 2101 W. 16th St., Anderson, Ind. "Simplex."
 Ballard, Henry, Patterson, N. Y.
 Barrett Motor Starter Mfg. Co., 350 W. 52nd St., New York, N. Y.
 Bear Mfg. Co., Rock Island, Ill. "Sandbo." (See page 405.)
 Ezy—See Star Specialty Mfg. Co.
 Handee—See Racine Handy Mfg. Co.
 Little Giant Starter Co., 139 Cleveland Ave., S. W., Canton, O.
 Miller Mer. Co., Memphis, Mo.
 Murphy Starter Co., Ida Grove, Ia.
 Pres-Toe—See Robertson Machine & Foundry Co.
 Racine Handy Mfg. Co., 107 Fifth St., Racine, Wis. "Handee."
 Relax Co., 2118 Monroe Ave., Norwood, O.
 Robertson Machine & Foundry Co., 56-58 Rano St., Buffalo, N. Y. "Pres-toe."
 Sandbo—See Bear Mfg. Co.
 Sleverkropp Engine Co., DeKoven & N. W. Tracks, Racine, Wis.
 Simplex—See American Simplex Co.
 Star Specialty Mfg. Co., 227 W. Erie St., Chicago, Ill. "Ezy." (See page 769.)
 3 in 1 Starter Co., 2309 Bosworth Ave., Chicago, Ill.
 Warnerlite Products Corp., Davenport, Iowa

STARTERS, Mechanical or Spring Engine, for Fords

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "Crowley."
 Crowley—See American Automobile Accessories Co.
 M. M. & E. Sales Co., Lenawee Co. Bank Bldg., Adrian, Mich. "Peerless."
 Neher, L. M., Warsaw, Ind.
 Peerless—See M. M. & E. Sales Co.
 Three-in-One Starter Co., 2309 Bosworth Ave., Chicago, Ill.

Everything is listed under the NOUN or principal word

STARTERS, PEDAL ENGINE—See Starters, Manual

STARTERS, SPRING ENGINE for Fords—See Starters, Mechanical

STARTERS, Tractor Compressed Air Engine

Christensen Engineering Co., 425 E. Water St., Milwaukee, Wis.

STARTERS, Tractor Electric Engine

North East Electric Co., Rochester, N. Y.

Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.

Simms Magneto Co., 277 N. Arlington Ave., East Orange, N. J.

STARTERS, VAPOR ENGINE—See Starters, Gasoline

STARTING CRANK HANDLES—See Handles, Starting Crank

STARTING CRANK HANDLES, EXTENSION FOR FORDS—See Handles, Extension Starting Crank

STARTING CRANK HOLDERS—See Holders, Starting Crank

STARTING CRANK LOCKS—See Locks, Starting Crank

STARTING CRANKS, SAFETY — See Cranks, Safety

STATIONS, Electric Service

(Covering only electric service stations who advertise in this publication)

U. S. Auto Supply Co., 3845-49 S. Wabash Ave., Chicago, Ill. (See page 955.)

STEADERS, STEERING GEAR — See Checks, Steering Gear

STEADY BEARINGS—See Bearings, Drive Shaft Steady

STEAM BOILERS—See Boilers, Steam

STEAM GAGES—See Gages, Steam

STEAM HAMMERS—See Hammers, Steam

STEAM MOTORS—See Engines, Steam

STEAM PRESSURE CONTROLLERS—See Controllers, Vulcanizer Steam Pressure

STEAM PUMPS—See Pumps, Steam

STEAM STORAGE BATTERY OPENING—See Steamers, Storage Battery.

STEAM TIRE CURING BAGS—See Bags, Steam Tire Curing

STEAMERS, Storage Battery

(Apparatus for softening the sealing compound on storage batteries by means of steam)

Ambu—See American Bureau of Engineering.

American Bureau of Engineering, 1609 S. Michigan Ave., Chicago, Ill. "Ambu." (See page 147.)

Andruss, N. F., 404 Golden Gate Ave., San Francisco, Cal.

Auto Electric Sales Co., 2933 Hennepin Ave., Minneapolis, Minn. "Weiman."

BX—See Milner Co.

Boulton—Perrigo Mfg. Co., 1126 W. Second St., Oklahoma City, Okla. "Scottie."

Cramer Storage Battery Co., 508 Wyoming Ave., Scranton, Pa.

Electrical Testing Co., 300-02 Knoxville, Ave., Peoria, Ill.

Gillmore Specialty Co., St. Paul, Minn. "Plaskett."

Globe Machine & Stamping Co., W. 76th St., Cleveland, O. "Sepco." (See page 155.)

Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.

Ibsco—See Illinois Battery Steamer Co.

Illinois Battery Steamer Co., 607 Spencer St., Peoria, Ill. "Ibsco."

Milner Co., L. C., 148 E. Georgia St., Indianapolis, Ind. "BX."

Orum, S. R. M., (No. Phila.), Philadelphia, Pa. Plaskett—See Gillmore Specialty Co.

Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.

Scottie—See Boulton-Perrigo Mfg. Co.

Sepco—See Globe Machine & Stamping Co.

Shonts Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (Dealers.) (See page 151.)

Weiman—See Auto Electric Sales Co.

Wherland Mfg. Co., 2708 E. Lake St., Minneapolis, Minn.

STEEL or Iron, Angle, Channel and Tee

Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.

Cambria Steel Co., Johnstown, Pa.

Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.

Chemung Iron & Steel Co., 77 Cortland St., New York, N. Y.

Illinois Steel Co., 203 S. La Salle St., Chicago, Ill.

Inland Steel Co., First National Bank Bldg., Chicago, Ill.

Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 821.)

Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.

Lockhart Iron & Steel Co., McKees Rocks, Pa. "Vulcan."

Logan Iron & Steel Co., 1431 Chestnut St., Philadelphia, Pa.

Pollak Steel Co., Equitable Bldg., New York, N. Y. (See page 387.)

Republic Iron & Steel Co., Republic Bldg., Youngstown, O.

Vulcan—See Lockhart Iron & Steel Co.

STEEL BALLS—See Balls, Steel

STEEL or Iron, Bar

American Iron & Steel Mfg. Co., Front & Cumberland Sts., Lebanon, Pa.

Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.

Argo—See Illingsworth Steel Co.

Everything is listed under the NOUN or principal word

STEEL or IRON, Bar (Continued)

Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
 Cambria Steel Co., Johnstown, Pa.
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Chemung Iron & Steel Co., 77 Cortland St., New York, N. Y.
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 819.)
 Illingworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."
 Illinois Steel Co., 303 S. La Salle St., Chicago, Ill.
 Inland Steel Co., First National Bank Bldg., Chicago, Ill.
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 821.)
 Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.
 Lackawanna Steel Co., Lackawanna, N. Y.
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Lockhart Iron & Steel Co., McKees Rocks, Pa. "Vulcan."
 Logan Iron & Steel Co., 1421 Chestnut St., Philadelphia, Pa.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 Pardee Works, C., Herbert & Market Sts., Perth Amboy, N. J.
 Pollak Steel Co., Equitable Bldg., New York, N. Y. (See page 887.)
 Railway Steel Spring Co., 80 Church St., New York, N. Y.
 Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
 Simonds Mfg. Co., Lockport, N. Y. (See page 819.)
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 United Alloy Steel Co., Eighth St. Extension, Canton, O.
 Universal Steel Co., Bridgeville, Pa.
 Vulcan—See Lockhart Iron & Steel Co.

STEEL CASTINGS—See Castings, Steel**STEEL, CHANNEL—See Steel, Angle****STEEL, Chrome**

American Stainless Steel Co., Oliver Bldg., Pittsburgh, Pa.
 Atlas Crucible Steel Co., Hanna Bldg., Cleveland, O.
 Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
 Carpenter Steel Co., Reading, Pa.
 Columbia Tool Steel Co., 14th & Butterfield Sts., Chicago Heights, Ill.
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Firth-Sterling Steel Co., McKeesport, Pa.
 Halcomb Steel Co., Syracuse, N. Y.
 Haynes & Son, Kokomo, Ind.
 Latrobe Electric Steel Co., Latrobe, Pa.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 National Drawn Steel Co., East Liverpool, O.
 Vanadium-Alloys Steel Co., Pittsburgh, Pa.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.
 Washington Steel & Ordnance Co., Washington, D. C.

STEEL, Chrome Nickel

Agathon—See Central Steel Co.
 American Import & Export Co., 150 Nassau St., New York, N. Y. (Importers.)

Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
 Arbo—See Carbon Steel Co.
 Argo—See Illingworth Steel Co.
 Arrow—See Crowley Co.
 Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)
 Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
 Carbon Steel Co., ft. 32d St., Pittsburgh, Pa. "Arbo," "Decco," "Shrapo."
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Carpenter Steel Co., Reading, Pa. "Samson."
 Central Steel Co., Massillon, O. "Agathon."
 Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Simplex," "Duplex."
 Decco—See Carbon Steel Co.
 Duplex—See Crucible Steel Co. of America.
 Fairley-Davidson Steel Co., 134 Malden Lane, New York, N. Y. (Importers.) "Hehtemnd."
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 819.)
 Halcomb Steel Co., Syracuse, N. Y.
 Hammond Steel Co., 2600 Milton Ave., Syracuse, N. Y.
 Hehtemnd—See Fairley-Davidson Steel Co.
 Hercules Electric Steel Corp., 137-45 Lafayette St., New York, N. Y. "Urite."
 Illingworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."
 Illinois Steel Co., 303 S. La Salle St., Chicago, Ill.
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 821.)
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Lancaster Steel Products Corp., Manheim Pike, Lancaster, Pa.
 Lindenbergh Steel Co., 90 West St., New York, N. Y. (Importers.)
 McInnes Steel Co., Corey, Pa.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 National Drawn Steel Co., East Liverpool, O.
 Samson—See Carpenter Steel Co.
 Shrapo—See Carbon Steel Co.
 Simplex—See Crucible Steel Co. of America.
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 Tusco—See United Alloy Steel Co.
 Union Drawn Steel Co., Beaver Falls, Pa. (See page 819.)
 United Alloy Steel Co., Eighth St. Extension, Canton, O. "Tusco."
 Universal Steel Co., Bridgeville, Pa.
 Urite—See Hercules Electric Steel Corp.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.

STEEL CLUTCH DISCS—See Discs, Steel**STEEL, Cold Rolled Bar**

Cambria Steel Co., Johnstown, Pa.
 Colurabria Steel & Shafting Co., Pittsburgh, Pa.
 Compressed Steel Shafting Co., 1587 Hyde Park Ave. (Readville), Boston, Mass.
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Cumberland Steel Co., William St. & B. & O. R. R., Cumberland, Md.
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 819.)
 Jones & Laughlin Steel Co., Jones & Laughlin Bldg., Pittsburgh, Pa.
 Lancaster Steel Products Corp., Manheim Pike, Lancaster, Pa.
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.

Everything is listed under the NOUN or principal word



Frasse-Electric and Open-Hearth Automobile STEELS

ALL GRADES AND FINISHES

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Interesting "BOOK OF STEELS" sent on request

*Manufacturers*FRASSE STEEL WORKS, Inc.
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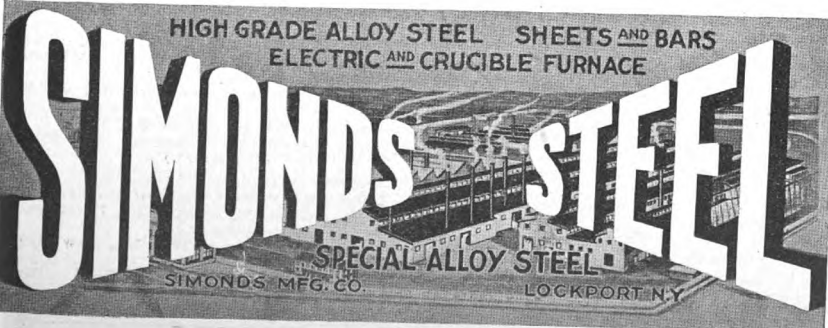
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HIGH GRADE ALLOY STEEL SHEETS AND BARS
ELECTRIC AND CRUCIBLE FURNACE

Please mention The Automobile Trade Directory

STEEL, Cold Rolled Bar (Continued)

Moltrup Steel Products Co., Beaver Falls, Pa. (See page 821.)
 National Drawn Steel Co., East Liverpool, O.
 Pardee Works, C. Herbert & Market Sts., Perth Amboy, N. J.
 Peerless Drawn Steel Co., Massillon, O.
 Union Drawn Steel Co., Beaver Falls, Pa. (See page 819.)
 United Alloy Steel Co., Eighth St. Extension, Canton, O.
 Witherow Steel Co., Keystone Bldg., Pittsburgh, Pa.

STEEL, Cold Rolled Strip

American Steel & Wire Co., Chicago, Ill. "Amerite," "Americore."
 Americore—See American Steel & Wire Co.
 Amerite—See American Steel & Wire Co.
 American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.
 Bordentown Steel & Tube Corp., Bordentown, N. J.
 Carpenter Steel Co., Reading, Pa.
 Columbia Steel Co., Elyria, O.
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Elyria Iron & Steel Co., Cleveland, O. (See page 913.)
 Greer Steel Co., Dover, O.
 Griffin Mfg. Co., 15th & Cherry Sts., Erie, Pa.
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Lancaster Steel Products Corp., Manheim Pike, Lancaster, Pa.
 Moltrup Steel Products Co., Beaver Falls, Pa. (See page 821.)
 Morris & Bailey Steel Co., Pittsburgh, Pa.
 Peerless Drawn Steel Co., Massillon, O.
 Stanley Works, (Special Productions Dept.), New Britain, Conn. (See page 457.)
 Superior Steel Corp., Union Arcade Bldg., Pittsburgh, Pa.
 Trumbull Steel Co., Warren, O.
 Weirton Steel Co., Weirton, W. Va.
 West Leechburg Steel Co., 305 Fifth Ave., Pittsburgh, Pa.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)

STEEL CRADLES, PORTABLE—See Cradles, Portable Steel**STEEL CUTTING—See Steel, High-Speed Cutting; also Steel, Self-Hardening****STEEL, Hot Rolled Strip**

American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.
 Bordentown Steel & Tube Corp., Bordentown, N. J.
 Elyria Iron & Steel Co., Cleveland, O. (See page 913.)
 Superior Steel Corp., Union Arcade Bldg., Pittsburgh, Pa.
 Trumbull Steel Co., Warren, O.
 Weirton Steel Co., Weirton, W. Va.
 West Leechburg Steel Co., 305 Fifth Ave., Pittsburgh, Pa.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)

STEEL, Dealers in

(Comprising only Dealers in Iron, Steel and other metals who advertise in this publication)

Morris & Co., E. K., 311-17 W. Second St., Cincinnati, O. (See page 909.)

STEEL FAN PULLEYS—See Pulleys, Pressed Steel Fan**STEEL, High-Speed Cutting**

Albion—See Hobson, Houghton & Co.
 Allen & Co., Edgar, 713 W. Lake St., Chicago, Ill. (Importers.)
 Andrew & Co., J. H., 28 Cortlandt St., New York, N. Y. "Toledo." (Importers.)
 Ark—See Jessop & Sons.
 Arrow—See Crowley Co.
 Atlas Crucible Steel Co., Hanna Bldg., Cleveland, O. "L-XX."
 Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)
 Blanche Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blanche Steel Co., Taunton, Mass.)
 Blanke Steel Co.—See Blanke Co.
 Bohlers—See Houghton & Richards.
 Burgess—See Cyclops Steel Co.
 Carpenter Steel Co., Reading, Pa. "Star Zenith."
 Clarite—See Columbia Tool Steel Co.
 Colonial Steel Co., 324 Fourth Ave., Pittsburgh, Pa.
 Columbia Tool Steel Co., 14th & Butterfield Sts., Chicago Heights, Ill. "Clarite."
 Como—See Darwin & Milner.
 Crowley, John A., 120-23 Liberty St., New York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Rex."
 Cyclops Steel Co., 265 E. Spring St., Titusville, Pa. "Burgess."
 Darwin & Milner, 403 Long Ave., Cleveland, O. "Como." (Importers.)
 Dreadnought—See Halcumb Steel Co.
 Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. "X-top," "Rushitoff." (Importers.)
 Fearless—See Hobson, Houghton & Co.
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 819.)
 Halcumb Steel Co., Syracuse, N. Y. "Dreadnought."
 Hammond Steel Co., 2600 Milton Ave., Syracuse, N. Y. "Triton-Taurus."
 Heller Bros. Co., 865 Mt. Prospect Ave., New York, N. Y.
 Hercules Electric Steel Corp., 137-45 Lafayette St., New York, N. Y. "Urite."
 Hobson, Houghton & Co., 38 Beekman St., New York, N. Y. (Importers.) "Albion," "Fearless."
 Houghton & Richards, 145 Oliver St., Boston, Mass. "Bohlers."
 Improved Capital—See Ward's Sons Co.
 Jessop & Sons, Wm., 91 John St., New York, N. Y. "Ark." (Importers.)
 L-XX—See Atlas Crucible Steel Co.
 Latrobe Electric Steel Co., Latrobe, Pa.
 Le Moyne Steel Co., Park Bldg., Pittsburgh, Pa.
 Lindenbergs Steel Co., 90 West St., New York, N. Y. (Importers.)
 Ludlum Steel Co., Watervliet, N. Y. "Mohawk."
 McInnes Steel Co., Corry, Pa.

Everything is listed under the NOUN or principal word

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ACCURATELY FINISHED FREE CUTTING COLD DRAWN SCREW STEEL
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**Alloy Steel Bars
and Spring Steel**

Products of the most modern Alloy Steel Works in America and the only open hearth alloy steel plant in the Chicago District.

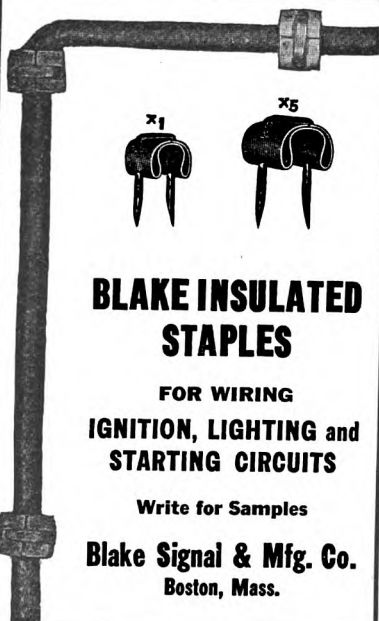
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Interstate Analyses
Special Analyses**

And Special features of our improved, enlarged mill enable us to hold down our own costs and to quote attractive prices.

Interstate Iron & Steel Co.
 104 So. Michigan Ave., Chicago



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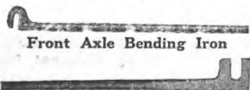
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STARTING CIRCUITS**

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 Boston, Mass.

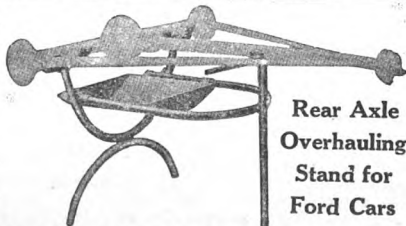
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For Overhauling Ford Cars



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MILWAUKEE, WISCONSIN

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STEEL, High-Speed Cutting (Continued)

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 Mohawk—See Ludlum Steel Co.
 Onondaga Steel Co., 1114 E. Water St., Syracuse, N. Y.
 Red Cut Superior—See Vanadium-Alloys Steel Co.
 Rex—See Crucible Steel Co. of America.
 Rushitoff—See Fairley-Davidson Steel Co.
 Star Zenith—See Carpenter Steel Co.
 Toledo—See Andrew & Co.
 Triton-Taurus—See Hammond Steel Co.
 Universal Steel Co., Bridgeville, Pa.
 Urite—See Hercules Electric Steel Corp.
 Vanadium-Alloys Steel Co., Pittsburgh, Pa.
 "Red Cut Superior."
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.
 Tusco—See United Alloy Steel Co.
 Ward's Sons Co., Edgar T., 44 Farnsworth St., Boston, Mass. "Improved Capital." (Importers.)
 X-tof—See Fairley-Davidson Steel Co.

STEEL LETTERS—See Stamps, Steel

STEEL, Manganese

American Manganese Steel Co., 323 S. Michigan Ave., Chicago, Ill.
 McCord & Co., 123 S. Michigan Ave., Chicago, Ill.
 Universal Steel Co., Bridgeville, Pa.

STEEL MATS FOR FORDS—See Mats, Floor Board

STEEL MOLDING—See Molding, Steel

STEEL, Nickel

Aegis—See United Alloy Steel Co.
 Agathon—See Central Steel Co.
 Allen & Co., Edgar, 718 W. Lake St., Chicago, Ill. (Importers.)
 Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
 Arrow—See Crowley Co.
 Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)
 Carbon Steel Co., ft. 32d St., Pittsburgh, Pa.
 "Nico."
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Carpenter Steel Co., Reading, Pa.
 Central Steel Co., Massillon, O. "Agathon."
 Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Electro Steel Co., Pittsburgh, Pa.
 Fairley-Davidson Steel Co., 124 Malden Lane, New York, N. Y. "Hehtemnd." (Importers.)
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 819.)
 Halcomb Steel Co., Syracuse, N. Y.
 Hammond Steel Co., 2600 Milton Ave., Syracuse, N. Y.
 Hehtemnd—See Fairley-Davidson Steel Co.
 Helmut Co., L., 17 Battery Pl., New York, N. Y. (Importers.)

Illinois Steel Co., 303 S. La Salle St., Chicago, Ill.

Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 821.)
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.

Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)

Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.

Nico—See Carbon Steel Co.

Pittsburgh Tool Steel Wire Co., Monaca, Pa.
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 Union Drawn Steel Co., Beaver Falls, Pa. (See page 819.)

United Alloy Steel Co., Eighth St. Extension, Canton, O. "Aegis."

Universal Steel Co., Bridgeville, Pa.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.

STEEL NUMBERS—See Stamps, Steel

STEEL RING GEARS—See Gears, Steel Ring

STEEL, Self-Hardening Cutting

Allen & Co., Edgar, 718 W. Lake St., Chicago, Ill. (Importers.)
 Argo—See Illingsworth Steel Co.
 Blue Chip—See Firth-Sterling Steel Co.
 Firth-Sterling, Steel Co., McKeesport, Pa.
 "Blue Chip."
 Halcomb Steel Co., Syracuse, N. Y.
 Hobson Houghton & Co., 31 Beekman St., New York, N. Y. "Soho." (Importers.)
 Illingsworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."
 Jessop & Sons, Wm., 91 John St., New York, N. Y. (Importers.)
 Soho—See Hobson, Houghton & Co.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa. "Wolfram."
 Wolfram—See Vulcan Crucible Steel Co.

STEEL, Sheet

Allegheny Steel Co., Brackenridge, Pa.
 American Rolling Mill Co., Middletown, O. "Middletown."
 American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa. "Thurite." (See page 823.)
 Apollo Steel Co., Apollo, Pa.
 Brier Hill Steel Co., Stambaugh Bldg., Youngstown, O.
 Crowley, John A., 120-22 Liberty St., New York, N. Y.
 Electro Steel Co., Pittsburgh, Pa.
 Falcon Steel Co., Niles, O.
 Follansbee Bros. Co., Third & Liberty Ave., Pittsburgh, Pa.
 Griffin Mfg. Co., 15th & Cherry Sts., Erie, Pa.
 Inland Steel Co., First National Bank Bldg., Chicago, Ill.
 La Belle Iron Works, Steubenville, O.
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 McCullough Iron Co., Wilmington, Del.
 McVoy Sheet & Tin Plate Co., 344-50 W. Michigan St., Chicago, Ill.
 Mahoning Valley Steel Co., Niles, O.
 Mansfield Sheet & Tin Plate Co., Mansfield, O.

Everything is listed under the NOUN or principal word



AUTOMOBILE Sheets

Automobile Body Stock
Automobile Fender and Hood Stock
Automobile Crown Fender Stock

Careful and thorough investigation of the requirements of automobile manufacturers, has resulted in the establishment of above three standard finishes, the modification of which in finish and forming qualities has enabled us to meet practically every phase of the industry to which sheet steel is adapted. Open Hearth Steel is used, as well as full pickled finish treatment—the products differing in the degree of finish and forming properties.

Deep Drawing Stock “THURITE”

For difficult drawings such as axle housings, radiator casings, hub caps, etc., we supply steels of special drawing qualities, the most capable of which is “THURITE”—a product which has astonished the fabricating world in its remarkable behavior under dies.

We manufacture Sheet and Tin Mill Products of every description and for every known purpose—Black Sheets, Galvanized Sheets, Special Sheets for Stamping, Long Terne Sheets, Enameling and Japanning Stock, Tin and Terne Plates, Black Plate, etc.



American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES—

Chicago, Cincinnati, Denver, Detroit, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis

Export Representatives: United States Steel Products Co., New York City

Pacific Coast Representatives: United States Steel Products Co., San Francisco, Los Angeles, Portland, Seattle

Please mention The Automobile Trade Directory

STEEL, Sheet (Continued)

Middletown—See American Rolling Mill Co.
 Newsteel—See Newton Steel Co.
 Newton Steel Co., Wick Bldg., Youngstown, O.
 "Newsteel."
 Seneca Iron & Steel Co., Buffalo, N. Y.
 Simonds Mfg. Co., Lookport, N. Y.
 (See page 819.)
 Taylor Co., N. & G., 308 Chestnut St., Philadelphia, Pa.
 Thurite—See American Sheet & Tin Plate Co.
 Trumbull Steel Co., Warren, O.
 Universal Steel Co., Bridgeville, Pa.
 Youngstown Sheet & Tube Co., Youngstown, O.

STEEL SHOP STOOLS—See Stools, Steel Shop**STEEL, Spring**

Arrow—See Crowley Co.
 Bethlehem Steel Co., Third & Poplar Sts., South Bethlehem, Pa.
 Cambria Steel Co., Johnstown, Pa.
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Carpenter Steel Co., Reading, Pa.
 Crowley, John A., 120-32 Liberty St., New York, N. Y. "Arrow."
 Crucia—See United Alloy Steel Co.
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Elastique—See United Alloy Steel Co.
 Excelsior—See Fairley-Davidson Steel Co.
 Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. "Excelsior." (Importers.)
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 819.)
 Halcomb Steel Co., Syracuse, N. Y.
 Harrow Spring Co.—See Steel Sales Co.
 Helmuth Co., L., 17 Battery Pl., New York, N. Y. (Importers.)
 Illinois Steel Co., 262 S. La Salle St., Chicago, Ill.
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 821.)
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Marlin-Rockwell Corp., 847 Madison Ave., New York, N. Y.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 National Lock Washer Co., 40 Hermon St., Newark, N. J.
 Steel Sales Co., Jefferson & Adams Sts., Chicago, Ill. (Sole Distributors for Harrow Spring Co., Milwaukee, Wis.)
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 United Alloy Steel Co., Eighth St. Extension, Canton, O. "Crucia." "Elastique."
 Universal Steel Co., Bridgeville, Pa.
 Vulcan Crucible Steel Co., First St., Aliquippa, Pa.

STEEL SPOKED WHEELS—See Wheels, Steel Spoked**STEEL STAMPINGS—See Stampings and Pressings, Metal****STEEL, TEE—See Steel, Angle****STEEL TESTING INSTRUMENTS—See Instruments, Metal Testing****STEEL, Tool**

Allen & Co., Edgar, 718 W. Lake St., Chicago, Ill. (Importers.)
 Andrew & Co., J. H., 28 Cortlandt St., New York, N. Y. "Toledo." (Importers.)
 Argo—See Illingsworth Steel Co.
 Arrow—See Crowley Co.
 Atlas Crucible Steel Co., Hanna Bldg., Cleveland, O. "Deward."
 Becker Steel Co. of America, 154 Nassau St., New York, N. Y. (Importers.)
 Black Diamond—See Crucible Steel Co. of America.
 Blanche Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blanche Steel Co., Taunton, Mass.)
 Blanche Steel Co.—See Blanche Co.
 Bohlers—See Houghton & Richards.
 Bourne-Fuller Co., Hickox Bldg., Cleveland, O.
 Brown & Co., Tenth St. & Duquesne Way, Pittsburgh, Pa.
 Carbon Steel Co., ft. 32d St., Pittsburgh, Pa. "Weto." "Cromo."
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Carpenter Steel Co., Reading, Pa.
 Colonial Steel Co., 324 Fourth Ave., Pittsburgh, Pa. "Red Star."
 Columbia Tool Steel Co., 14th & Butterfield Sts., Chicago Heights, Ill.
 Connecticut Electric Steel Co., 540 Flatbush Ave., Hartford, Conn. "Phillipsite."
 Crescent—See Crucible Steel Co. of America.
 Cromo—See Carbon Steel Co.
 Crowley, John A., 120-32 Liberty St., New York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Black Diamond." "Crescent." "Banderson."
 Cyclops Steel Co., 245 E. Spring St., Titusville, Pa.
 Dannemora—See Ward's Sons Co.
 Deward—See Atlas Crucible Steel Co.
 Eagle—See Le Moyne Steel Co.
 Electro Steel Co., Pittsburgh, Pa.
 Fairley-Davidson Steel Co., 124 Maiden Lane, New York, N. Y. "Fondwot." (Importers.)
 Fifth-Sterling Steel Co., McKeesport, Pa.
 Fondwot—See Fairley-Davidson Steel Co.
 Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (See page 819.)
 Halcomb Steel Co. of Syracuse, N. Y. "Ketos."
 Hammond Steel Co., 2600 Milton Ave., Syracuse, N. Y. "Phoenix."
 Heller Bros. Co., 865 Mt. Prospect Ave., New York, N. Y.
 Hess Steel Corp., Baltimore, Md.
 Hobson, Houghton & Co., 23 Beekman St., New York, N. Y. (Importers.)
 Houghton & Richards, 145 Oliver St., Boston, Mass. "Bohlers."
 Illingsworth Steel Co., John (Frankford), Philadelphia, Pa. "Argo."
 Jessop & Sons, Wm., 21 John St., New York, N. Y. (Importers.)
 Ketos—See Halcomb Steel Co.
 Lancaster Steel Products Corp., Manheim Pike, Lancaster, Pa.
 Latrobe Electric Steel Co., Latrobe, Pa.
 Le Moyne Steel Co., Park Bldg., Pittsburgh, Pa. "Eagle."
 Lindenberg Steel Co., 90 West St., New York, N. Y. (Importers.)
 Ludlum Steel Co., Watervliet, N. Y. "Pompton." "Seminole." "Silchrome."
 McInnes Steel Co., Corry, Pa.
 Marlin-Rockwell Corp., 847 Madison Ave., New York, N. Y.

Everything is listed under the NOUN or principal word

STEEL, Tool (Continued)

Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 Phillipeite—See Connecticut Electric Steel Co.
 Phoenix—See Hammond Steel Co.
 Pittsburgh Tool Steel Wire Co., Monaca, Pa.
 Pompton—See Ludlum Steel Co.
 Red Star—See Colonial Steel Co.
 Sanderson—See Crucible Steel Co. of America.
 Seminole—See Ludlum Steel Co.
 Silchrome—See Ludlum Steel Co.
 Tacony Steel Co. (Tacony), Philadelphia, Pa.
 Toledo—See Andrew & Co.
 Trojan Electric Steel Co., 3401 S. Hoyne Ave., Chicago, Ill.
 Universal Steel Co., Bridgeville, Pa.
 Vanadium-Alloys Steel Co., Pittsburgh, Pa. "Vasco."
 Vasco—See Vanadium-Alloys Steel Co.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.
 Ward's Sons Co., Edgar T., 44 Farnsworth St., Boston, Mass. "Dannemora." (Importers.)
 Weto—See Carbon Steel Co.
STEEL TUBE—See Tubing, Steel

STEEL, Vanadium

Agathon—See Central Steel Co.
 Allen & Co., Edgar, 718 W. Lake St., Chicago, Ill. (Importers.)
 Alva—See Crucible Steel Co. of America.
 Andrews Steel Co., Ninth & Lowell Sts., Newport, Ky.
 Arrow—See Crowley Co.
 Carnegie Steel Co., Carnegie Bldg., Pittsburgh, Pa.
 Central Steel Co., Massillon, O. "Agathon."
 Crowley, John A., 120-22 Liberty St., New York, N. Y. "Arrow."
 Crucible Steel Co. of America, Oliver Bldg., Pittsburgh, Pa. "Alva."
 Fairley-Davidson Steel Co., 124 Malden Lane, New York, N. Y. "Hehtemnd." (Importers.)
 Halcumb Steel Co., Syracuse, N. Y.
 Hammond Steel Co., 2600 Milton Ave., Syracuse, N. Y.
 Harrow Spring Co.—See Steel Sales Co.
 Hehtemnd—See Fairley-Davidson Steel Co.
 Hercules Electric Steel Corp., 127-43 Lafayette St., New York, N. Y. "Urite."
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 821.)
 La Salle Steel Co., 2305 S. Halsted St., Chicago, Ill.
 Lancaster Steel Products Corp., Manheim Pike, Lancaster, Pa.
 Ludlum Steel Co., Watervliet, N. Y.
 McInnes Steel Co., Corry, Pa.
 Midvale Steel & Ordnance Co., Widener Bldg., Philadelphia, Pa.
 National Drawn Steel Co., East Liverpool, O.
 Pittsburgh Tool Steel Wire Co., Monaca, Pa.
 Steel Sales Co., Jefferson & Adams Sts., Chicago, Ill. (Sole Distributors for Harrow Spring Co., Milwaukee, Wis.)
 Union Drawn Steel Co., Beaver Falls, Pa. (See page 819.)
 United Alloy Steel Co., Eighth St. Extension, Canton, O.
 Urite—See Hercules Electric Steel Corp.
 Vanadium-Alloys Steel Co., Pittsburgh, Pa. "Vasco."
 Vasco—See Vanadium-Alloys Steel Co.
 Vulcan Crucible Steel Co., First St., Alliquippa, Pa.

STEEL WASHERS—See Washers, Iron**STEEL WHEELS**—See Wheels, Cast Steel; also Wheels, Tractor Steel**STEEL WIRE**—See Wire**STEEL WIRE BROOMS**—See Brooms, Steel Wire**STEEL WOOL**—See Wool, Steel**STEERING APPARATUS** — See Gears, Steering**STEERING COLUMN BRACES FOR FORDS** —See Braces, Steering Column**STEERING COLUMN CONTROLS**—See Controls, Dash and Steering Column Carburetor**STEERING COLUMN SILENCERS FOR FORDS**—See Braces, Steering Column**STEERING CONNECTIONS**—See Connections, Steering**STEERING CONNECTIONS FOR FORDS** —See Links, Steering**STEERING GEAR CHECKS**—See Checks, Steering Gear**STEERING GEAR LOCKS FOR FORDS**—See Locks, Steering Gear**STEERING GEAR STEADYING DEVICES** —See Checks, Steering Gear**STEERING GEAR STOPS**—See Stops, Steering Gear**STEERING GEAR STRUTS**—See Checks, Steering Gear**STEERING GEARS**—See Gears, Steering**STEERING GUIDES, TRACTOR**—See Guides, Tractor Steering**STEERING KNUCKLE BOOTS**—See Boots, Steering Knuckle**STEERING KNUCKLE BUSHING MILLS FOR FORDS** — See Mills, Steering Knuckle Bushing**STEERING KNUCKLES** — See Forgings, Drop**STEERING LINKS FOR FORDS**—See Links, Steering**STEERING RINGS, QUICK DETACHABLE TRACTOR**—See Rings, Tractor Quick Detachable Steering**STEERING ROD SILENCERS FOR FORDS** —See Anti-Rattlers, Steering Rod

Everything is listed under the NOUN or principal word

STEERING RODS FOR FORDS — See Links, Steering

STEERING WHEEL CLOCKS FOR FORDS — See Clocks, Steering Wheel

STEERING WHEEL COVERS — See Covers, Steering Wheel Rim

STEERING WHEEL LOCKS — See Locks, Steering Wheel

STEERING WHEEL RIMS — See Rims, Wood Steering Wheel; also Rims, Rubber Steering Wheel

STEERING WHEEL SWITCHES — See Switches, Steering Wheel

STEERING WHEELS — See Wheels, Steering

STEERING WHEELS, ELECTRICALLY HEATED — See Warmers, Hand

STEM ADJUSTERS — See Adjusters, Valve Stem

STEP BOLTS — See Bolts, Machine and Carriage

STEP HANGERS — See Hangers, Pressed Steel Step

STEP MATS — See Mats, Running Board

STEP PLATES — See Plates, Step

STEPS, FORGED — See Forgings, Drop

STEPS AND RUNNING BOARDS — See Boards, Running

STETHOSCOPES, MOTOR TESTING — See Instruments, Engine Testing

STILLS, Water

(For distilling water for use in storage batteries)

Barnstead Still & Sterilizer Co., 2 Lanesville Terrace (Forest Hills), Boston, Mass.

Boulton-Perrigo Mfg. Co., 1136 W. Second St., Oklahoma City, Okla. "Wampus Kat."

Cleveland Water Still Co., 500 Prospect Ave., Cleveland, O.

Eureka — See Lattner Mfg. Co.

Genco — See General Scientific Equipment Co. General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."

Kline, Maurice, 3216 N. Newkirk St., Philadelphia, Pa.

Lalor Co., W. M., 431 S. Dearborn St., Chicago, Ill. "Rochlitz."

Lattner Mfg. Co., Ludington, Mich.

Lattner Mfg. Co., P. M., 515 F Ave., W., Cedar Rapids, Iowa. "Eureka."

Link Co., A. P., 223 73d St., Brooklyn, N. Y.

Precision Steam Meter Co., 320-22 S. Tripp Ave., Chicago, Ill.

Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.

Rochlitz — See Lalor Co.

Sargent Steam Meter Co., 800-02 Sibley St., Chicago, Ill.

Shonta Co., H. B., Dept. C., 161 W. 64th St., New York, N. Y. (Dealers.) (See page 151.)

Standard Water Systems Co., Hampden, N. J. "Tripure."

Stokes Machine Co., F. J., Tabor Rd. & Cedar Grove Sta., Philadelphia, Pa.

Tripure — See Standard Water Systems Co. Vayo & Co., A. H., 190 N. State St., Chicago, Ill.

Wampus Kat — See Boulton-Perrigo Mfg. Co.

STITCHING MACHINES — See Machines, Double Tread Tire Stitching

STOCK RACKS — See Racks, Metal Tool

STOCKS, Die

Acme — See American Tap & Die Co.

Adamantine — See American Tap & Die Co. American Tap & Die Co., Greenfield, Mass. "Acme," "Adamantine." (See page 853.)

Armstrong Mfg. Co., 335 Knowlton Ave., Bridgeport, Conn.

Bealy & Co., Charles H., 118-24 N. Clinton St., Chicago, Ill.

Brubaker & Bros., W. L., 50 Church St., New York, N. Y.

Butterfield & Co. (Division of Union Twist Drill Co.), Derby Line, Vt.

Card Mfg. Co., S. W., Mansfield, Mass.

Carpenter Tap & Die Co., J. M., Pawtucket, R. I.

Conant & Donelson Co., Conway, Mass. "Reliable."

Duplex — See Hart Mfg. Co.

Economy — See Greenfield Tap & Die Corp.

GTD — See Greenfield Tap & Die Corp.

Green River — See Greenfield Tap & Die Corp. Greenfield Tap & Die Corp., Greenfield, Mass. "Little Giant," "Lightning,"

"Green River," "Economy," "G T D." (See page 855.)

Hart Mfg. Co., 2315-25 E. 20th St., Cleveland, O. "Duplex."

Lightning — See Greenfield Tap & Die Corp.

Little Giant — See Greenfield Tap & Die Corp. Lowell Wrench Co., 54 Commercial St., Worcester, Mass.

Pratt & Whitney Co., 111 Broadway, New York, N. Y.

Reliable — See Conant & Donelson.

Thistle — See Winter Bros. Co.

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

STOCKS, TRANSMISSION DRUM FOR FORDS — See Holders, Transmission Drum

STOOLS, Steel Shop

Angle Steel Stool Co., Otsego, Mich. "Otsteel."

Kalamazoo Steel Goods Co., Kalamazoo, Mich. Manufacturing, Equipment & Engineering Co., Framingham, Mass.

New Britain Machine Co., Chestnut St., New Britain, Conn.

Otsteel — See Angle Steel Stool Co.

STOPPERS, GLARE — See Dimmers, Glare

STOPS, Automatic Engine

(For automatically stopped engine if oiling system fails)

Protect-a-Motor Sales Co., 1737 McGee St., Kansas City, Mo. (Sole Distributors for Willis-Warner Mfg. Co., Kansas City, Mo.)

Willis-Warner Mfg. Co. — See Protect-a-Motor Sales Co.

Everything is listed under the NOUN or principal word

STOPS, Pedal for Fords

(To automatically stop the throw of the pedal at the neutral point)

Porter Products Corp., 670 Keith Bldg., Syracuse, N. Y. (See page 289.)

STOPS, Ratchet, for Fords

(Ratchet stop to be applied to brake drums to prevent car rolling backward on steep grades)

Wayland Specialty Mfg. Co., Wayland, N. Y.

STOPS, Steering Gear for Fords

(Device to prevent steering arm passing beyond center and locking when turning)

Stiles Mfg. Co., St. Louis, Mo. (See page 471.)

STORAGE BATTERIES — See Batteries, Storage

STORAGE BATTERY ACID—See Electrolyte, Storage Battery.

STORAGE BATTERY BOXES—See Boxes, Storage Battery; also Boxes, Metal Battery

STORAGE BATTERY CARRIERS — See Carriers, Storage Battery

STORAGE BATTERY CHARGERS — See Dynamos and Motor Generators, Battery Charging

STORAGE BATTERY CHARGING CLIPS — See Clips, Electric Test; also Connectors, Storage Battery Charging

STORAGE BATTERY CHARGING CONNECTORS—See Connectors, Storage Battery Charging

STORAGE BATTERY CHARGING PLUGS — See Plugs, Charging

STORAGE BATTERY CONNECTOR DRILLS — See Drills and Bits, Battery Strap

STORAGE BATTERY CONNECTORS—See Connectors, Storage Battery

STORAGE BATTERY CONTROLLERS—See Controllers, Storage Battery

STORAGE BATTERY ELECTROLYTE—See Electrolyte, Storage Battery

STORAGE BATTERY FILLERS—See Fillers, Storage Battery

STORAGE BATTERY HANDLES — See Handles, Storage Battery

STORAGE BATTERY HOLDING DOWN CLAMPS—See Clamps, Storage Battery Holding Down

STORAGE BATTERY JARS—See Jars, Storage Battery

STORAGE BATTERY OPENING GEN-ERATORS—See Steamers, Storage Battery Opening

STORAGE BATTERY PLATE PRESSES—See Presses, Storage Battery Plate

STORAGE BATTERY POST CUTTERS—See Tools, Storage Battery Repair

STORAGE BATTERY REPAIR PARTS — See Parts, Storage Battery Repair

STORAGE BATTERY REPAIR TOOLS—See Tools, Storage Battery Repair

STORAGE BATTERY SEPARATORS—See Separators, Storage Battery

STORAGE BATTERY STEAMERS — See Steamers, Storage Battery

STORAGE BATTERY TERMINAL PAINTS — See Paints, Storage Battery Terminal

STORAGE BATTERY TESTING INSTRUMENTS—See Instruments, Storage Battery Testing

STORAGE BATTERY THERMOSTATS—See Thermostats, Storage Battery

STORAGE BATTERY TONGS—See Tools, Storage Battery Repair

STORAGE BATTERY TURNABLES—See Turntables, Storage Battery

STORAGE BATTERY VISES—See Vises, Storage Battery

STORAGE SYSTEMS—See Tanks and Systems, Gasoline Storage

STORAGE TANKS—See Tanks and Systems, Gasoline Storage

STOVE BOLTS—See Bolts, Stove

STOVES, Camp

American Gas Machine Co., 810 Clark St., Albert Lea, Minn. "Kampkook."

Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.

Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Auto Camp Stove Co., 1420 Cass St., Fort Wayne, Ind.

Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich. "Kamp Kook."

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Boyle Mfg. Co., 21 Sutter St., Los Angeles, Cal. (See page 183.)

Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo. "Dandy."

Dandy—See Burch Mfg. Co.

Doud Engineering Co., 521 S. Laflin St., Chicago, Ill.

Enterprise Mfg. Co., Bowery & Center Sts., Akron, O.

Handy—See National Stamping & Electric Works.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Distributors East of the Mississippi River for Standley Adjusters.) (See page 138B.)

Kamp Kook—See Auto-Kamp Equipment Co.

Kampkook—See American Gas Machine Co.

Everything is listed under the NOUN or principal word

STOVES, Camp (Continued)

Kampkook—See Phoenix Tent & Awning Co.
Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.

Moats—See Prentiss-Wabers Stove Co.
National Stamping & Electric Works, 424 S. Clinton St., Chicago, Ill. "Handy."

Phoenix Tent & Awning Co., First & Monroe Sts., Phoenix, Ariz. "Kampkook."

Prentiss-Wabers Stove Co., 25 Spring St., Grand Rapids, Wis. "Moats."

Prest-O-Lite Co., 30 E. 42d St., New York, N. Y.

Stanley Skid Chain Co., Boone, Iowa.
 (See page 138B.)

STRAIGHTENING BARS, AXLE, FOR FORDS—See Bars, Axle Straightening

STRAIGHTENING MACHINES—See Machines, Leaf Spring Straightening

STRAIGHTENING PRESSES—See Presses, Bench Straightening

STRAIGHTENING TOOLS—See Tools, Fender Straightening

STRAIGHTENING TOOLS, RIM—See Tools, Rim Straightening

STRAINERS, CARBURETOR INTAKE—See Cleaners, Air

STRAINERS or SEPARATORS, Gasoline

(For use between tank and carburetor to remove dirt and water; for Strainer Funnel—See Funnel, or Measures, Metal)

American Brass & Iron Co., Detroit, Mich. (See page 203.)

Anthony Co., 138 West Ave., Long Island City, N. Y. (See page 127.)

Atkins Co., E. G., 26 E. Sixth St., Mansfield, O.

Automat-Co—See Automotive Material Co.

Automotive Material Co., 451 E. Ohio St., Chicago, Ill. "Automat-Co."

Bassick Mfg. Co., 301 W. Superior St., Chicago, Ill. "Gas-Co-lator."
 (See page 839.)

Bee Zee—See Zimmerman Mfg. Co.

Beneke & Kropf Mfg. Co., 2559 W. 21st St., Chicago, Ill. "Rayfield."

Bousman Mfg. Co., 1157 Plainfield Ave. N. E., Grand Rapids, Mich. "Grand Rapids."

Breeze Metal Hose & Mfg. Co., 250-52 South St., Newark N. J.

Bush Mfg. Co., Hartford, Conn.
 (See page 683.)

Colador Engineering Corp., 276 Jackson Ave., Long Island City, N. Y.

Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit, Mich.

Eisenbrandt, F. B., Light St., Baltimore, Md. "Practical."

Gas-Co-lator—See Bassick Mfg. Co.

Grand Rapids—See Bousman Mfg. Co.

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Johnson Co., 1909 E. Forest Ave., Detroit, Mich.

Juhass Carburetor Co., 244 W. 49th St., New York, N. Y.

Kleengas—See National Automotive Mfg. Co.

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Trusty."

McRae & Roberts Co., 100-116 S. Campbell Ave., Detroit, Mich.

Michigan Lubricator Co., 3648 Beaubien St., Detroit, Mich.

Michigan Wire Cloth Co., 2100 Howard St., Detroit, Mich.

National Automotive Mfg. Co., 822 Champlain Ave., Cleveland, O. "Kleengas."
 (See page 829.)

National Gauge & Equipment Co., La Crosse, Wis. (See page 401.)

National Separator & Machine Co., 89 State St., Boston, Mass. "Springfield."

Parsons Mfg. Co., 5301-47 Bellevue Ave., Detroit, Mich.

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.

Practical—See Eisenbrandt, F. B.

Rayfield—See Beneke & Kropf Mfg. Co.

Ro-Gas-Filter—See Roll Mfg. Co.

Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.

Roll Mfg. Co., Macy St., Fond du Lac, Wis. "Ro-Gas-Filter." (See page 829.)

Sage Bros., 780 Union St., Brooklyn, N. Y. "Sasco." (See page 829.)

Sasco—See Sage Bros.

Springfield—See National Separator & Machine Co.

Sterling & Skinner Mfg. Co., 2672 E. Grand Blvd., Detroit, Mich.

Storm Mfg. Co., 406 Sixth Ave S., Minneapolis, Minn.

Stromberg Motor Devices Co., Dept. 1020, 64 E. 25th St., Chicago, Ill.
 (See page 193.)

Trusty—See Lunkenheimer Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.
 (See page 471.)

Wheeler-Schebler Carburetor Co., Indianapolis, Ind. (See page 197.)

Zim Gas-O-Clean—See Zimmerman Mfg. Co.

Zimmerman Mfg. Co., B. F., New Haven, Conn. "Bee Zee," "Zim Gas-o-Clean."
 (See page 841.)

STRAINERS, Radiator and Tank Filler

(Strainer baskets of woven wire for use in fuel and oil tanks and radiators)

Industrial Electric Mfg. Co., Wayne, Mich.

Multi-Metal Co., 251 W. 19th St., New York, N. Y.

STRAINERS, TANK—See Strainers, Radiator and Tank

STRAP BUCKLES—See Buckles, Strap

STRAP LOOPS—See Loops, Brass Snap

STRAP SNAPS—See Hooks, Snap

STRAPS, Anti-Rattling Hood

(Leather or web straps with spiral spring to put over engine hoods to prevent their rattling)

Bantlin Co., Julius J., Cincinnati, O.

Campbell—See Perkins Campbell Co.

Detroit Leather Works, 693 E. Lafayette Blvd., Detroit, Mich. (See page 121.)

Everything is listed under the NOUN or principal word



MORE MILEAGE—MORE POWER

By Using

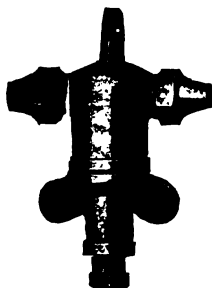
RO-GAS-FILTER

The Ro-Gas-Filter is a device of brass and glass, easily attached on the feed line of any car or truck. The Ro-Gas-Filter will remove all water and other impurities from any gas. Now in use on many cars. Popular Low Price.

Its use increases the power and lowers operating cost. Attractive dealer proposition and descriptive matter on request.

THE ROLL MANUFACTURING COMPANY

Macy Street, Fond du Lac, Wisconsin



Motor Saco Strainer

Keeps Dirt and Water Out of the Carburetor

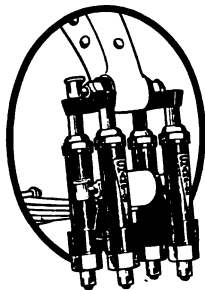
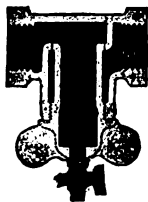
We manufacture STRAINERS Exclusively. From the small Gasoline Motor to the large Ocean Liner, both Single or Duplex. For any kind of Liquid,

Our Catalogue Shows a Very Complete Line

SAGE BROTHERS, Inc.

780 Union Street - Brooklyn, N. Y., U. S. A.

Largest Exclusive Manufacturers of
STRAINERS in the United States



CHAMPION

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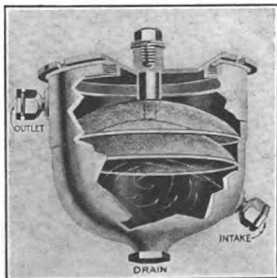
SHOCK ABSORBERS

"Master of All Roads"

The ONLY Patented Shock Absorber which works both ways. Eliminates the shock and also the REBOUND. Scientific construction. Guaranteed against defects. Fits all cars having shackles. Write for details regarding exclusive territories.

Champion Products Mfg. Co.

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Newark, N. J.



KLEENGAS PURIFIER

For Automobiles
Trucks, Tractors
Motor Boats

The Purifier allows only clean gas to reach the carburetor.

Removes all water, grit and dirt.

Prevents water lodging in jet, and frozen gasoline pipes.

Approved by leading Engineers.

Attractive Dealer Proposition Write for Full Particulars

THE NATIONAL AUTOMOTIVE MFG. CO.

822 Champlain Ave.

CLEVELAND, OHIO

Please mention The Automobile Trade Directory

STRAPS, Anti-Rattling Hood (Continued)

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)
 Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tuflex."
 Rose Mfg. Co., Frank, Hastings, Neb. (See page 675.)
 Tuflex—See Rochester Woven Belting Corp.

STRAPS, HOOD—See Straps, Anti-Rattling Hood; also Straps, Leather**STRAPS, Leather**

Almco—See Auto Leather Mfg. Co.
 Auto Leather Mfg. Co., Arlington, N. J. "Almco," "Kaenjay."
 Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.
 B. E. Mfg. Co., 210 13th St., Long Island City, N. Y. "Bemco." (See page 299.)
 Backstay Machine & Leather Co., Oak & Howard Sts., Union City, Ind.
 Badger Handle Co., 415-19 Third St., Milwaukee, Wis.
 Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."
 Bantlin Co., Julius J., Cincinnati, O.
 Bemco—See B. E. Mfg. Co.
 Bond Co., Charles, 617 Arch St., Philadelphia, Pa. "Fabritex."
 Boston Leather Specialties, 30 Merrimac St., Boston, Mass.
 Campbell—See Perkins, Campbell Co.
 Carter Co., George R., Connorsville, Ind.
 Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.
 Decker, J. C., Montgomery, Pa.
 Deford Co., 729 Atlantic Ave., Boston, Mass.
 Desoco—See Detroit Socket Co.
 Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Detroit Socket Co., 2744 W. Jefferson Ave., Detroit, Mich. "Desoco."
 Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind. (See page 595.)
 Economy Stay Co., Jefferson City, Mo.
 Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Straps.) (See page 113.)
 Fabritex—See Bond Co.
 Feesser Co., Frank S., 1102 Prospect St., Indianapolis, Ind. "Superior."
 Fitwell—See Bailey-Fitwell Co.
 G. & K.—See Graton & Knight Mfg. Co.
 General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.
 Gilmer Co., L. H., Philadelphia, Pa. (See pages 116 and 117.)
 Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)
 Hager & Son, Chas., 1926 Broadway, New York, N. Y.
 Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind.
 Hildick, Thomas H., 256 Market St., Newark, N. J.
 Hoeffel & Co., R., 61-69 Carroll St., Buffalo, N. Y.
 Hunt Co., Henry C., 261 Franklin St., Boston, Mass.
 Hutchinson Bros. Cut Leather Co., 1928 W. Eighth St., Cincinnati, O.

Jewell Belting Co., 15 Trumbull St., Hartford, Conn.
 Kaenjay—See Auto Leather Mfg. Co.
 Kelley, A. F., 178 E. Main St., Providence, R. I.
 Kerr Specialty Co., 12th St. & G. T. R. R., Detroit, Mich.
 Kronauer & Co., Chas., 153 N. Desplaines St., Chicago, Ill.
 Leather Parts Co., Gest & Evans Sts., Indianapolis, Ind.
 Leather Products Co., 612-20 Baymiller St., Cincinnati, O.
 Lefkowitz & Bro., L., 1 Greene St., New York, N. Y.
 Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
 Mooney Belting Co., 844 W. Sixth St., Cincinnati, O.
 Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)
 National Leather Co., 161 South St., Boston, Mass.
 Neidhardt & Co., C., 31 N. Water St., Rochester, N. Y.
 Page Belting Co., Concord, N. H.
 Perkins-Campbell Co., Cincinnati, O. "Campbell." (See page 299.)
 Powers Mfg. Co., Waterloo, Ia. (See page 530.)
 Prince Auto Fabric Mfg. Co., 4101 Fort Hamilton Ave., Brooklyn, N. Y.
 R-E—See Roose Mfg. Co.
 Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.
 Rhoads & Sons, J. E., 12 N. Third St., Philadelphia, Pa.
 Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E."
 Rose Mfg. Co., Frank, Hastings, Neb. (See page 675.)
 Sage's Trunk & Leather Goods Co., 10 Washington St., N. Boston, Mass.
 Specialty Harness Co., Dayton, Va.
 Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
 Stevens & Bro., A. A., 1234 Wabash Ave., Chicago, Ill.
 Strecker Bros. Co., 117-19 Putnam St., Marietta, O.
 Superior—See Feesser Co.
 Sutherland Leather & Felt Co., 139 Beaubien St., Detroit, Mich.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Wakefield Sales Co., Trempealeau, Wis.
 Williamsport Leather Goods Co., 944 Nichols Pl., Williamsport, Pa. "Wsoo."
 Wing Co., Charles, Amesbury, Mass. (See page 799.)
 Winship, W. W., 71 Summer St., Boston, Mass.
 Wsoo—See Williamsport Leather Goods Co.

STRAPS, Rebound

(See also Shock Absorbers; also Springs, Supplementary)

Badger Handle Co., 415-19 Third St., Milwaukee, Wis.
 Buckeye—See Central Brass & Fixture Co.
 Carter Co., George R., Connorsville, Ind.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich. (See page 121.)
 Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Straps.) (See page 113.)

Everything is listed under the NOUN or principal word

STRAPS, Rebound (Continued)

Fessier Co., Frank S., 1103 Prospect St., Indianapolis, Ind. "Superior."
G. & K.—See Graton & Knight Mfg. Co.
Gilmer Co., L. H., Philadelphia, Pa. (See pages 116 and 117.)
Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)
Hutchinson Bros. Cut Leather Co., 1928 W. Eighth St., Cincinnati, O.
Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.
Mesinger Mfg. Co., H. & F., Austin Pl. & E. 144th St., New York, N. Y.
Perkins-Campbell Co., Cincinnati, O. (See page 289.)
Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tuftex."
Rose Mfg. Co., Frank, Hastings, Neb. (See page 675.)
Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 116.)
Superior—See Fessier Co.
Sutherland Leather & Felt Co., 139 Beaubien St., Detroit, Mich.
Tuftex—See Rochester Woven Belting Corp.

Manufacturing & Sales Corp., 40 Cedar St., New York, N. Y.
Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.
Powers Mfg. Co., Waterloo, Ia. "Hinson." (See page 530.)
Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tuftex."
Rossendale-Reddaway Belting & Hose Co., 39 W. 19th St., New York, N. Y.
Rusco—See Russell Mfg. Co.
Russell Mfg. Co., Middletown, Conn. "Rusco." (See page 530.)
Sutherland Leather & Felt Co., 139 Beaubien St., Detroit, Mich.
Tuftex—See Rochester Woven Belting Corp.
Ustus—See Dafeo-Eustice Co.
Utica Suspender Co., 1832 Sunset Ave., Utica, N. Y.

STRAW SEATS—See Seats, Auxiliary

STRIP STEEL—See Steel, Cold Rolled Strip; also Steel, Hot Rolled Strip

STRIPS, Spring Leaf Lubricating

(Composition lubricating strips to place between spring leaves to prevent squeaking; for Spring Leaf Oilers—See Cups and Covers, Spring Leaf Lubricating; for Spring Leaf Separating Tools—See Tools, Spring Leaf Separating)

Avery—See Northwestern Chemical Co.
Avery Portable Lighting Co., 351 National Ave., Milwaukee, Wis.
Center-Fed Spring Insert Sales Co., Coal Exchange Bldg., Wilkes-Barre, Pa. (See page 835.)
Cleveland Graphite-Bronze Co., 30th St. & Chestnut Ave., Cleveland, O.
Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 655.)
Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco," "Avery." (See page 275.)
Norwesco—See Northwestern Chemical Co.
Spiller Co., H. A., 55 Elm St., Boston, Mass. "Springeze."
Springeze—See Spiller Co.
Springlife Co., 1809 E. Seventh St., Kansas City, Kans.
Wonder Worker—See Hall-Thompson Co.

STRAPS, Rebound, for Fords

(See also Shock Absorbers; also Springs, Supplementary)

Bantlin Co., Julius J., Cincinnati, O.
Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Straps.) (See page 113.)
G. & K.—See Graton & Knight Mfg. Co.
Gilmer Co., L. H., Philadelphia, Pa. (See pages 116 and 117.)
Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)
Mesinger Mfg. Co., H. & F., Austin Pl. & E. 144th St., New York, N. Y.
Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
Perkins-Campbell Co., Cincinnati, O. (See page 289.)
Rochester Woven Belting Corp., Commercial St., East Rochester, N. Y. "Tuftex."
Tuftex—See Rochester Woven Belting Corp.

STRAPS, STARTING CRANK—See Holders, Starting Crank

STRAPS, STORAGE BATTERY REPAIR—See Parts, Storage Battery Repair

STRAPS, TIRE—See Straps, Leather; also Straps, Web

STRAPS, TOP—See Straps, Leather; also Straps, Web

STRAPS, Web

American Mills Co., of N. Y., 438 Broadway, New York, N. Y.
Avey Leather Goods Mfg. Co., 904-10 Evans St., Cincinnati, O.
Buffalo Weaving & Belting Co., Buffalo, N. Y. (See page 841.)
Dafeo-Eustice Co., 4042 W. Jefferson Ave., Detroit, Mich. "Deco," "Ustus."
Deco—See Dafeo-Eustice Co.
Herman Mfg. Co., 1214 H St., N. W., Washington, D. C.
Hinson—See Powers Mfg. Co.

STRIPS, Wind Shield Weather

Akron Auto Garage Co., 26 E. Buchtell St., Akron, O.
Atlas Specialty Mfg. Co., 2110 So. Morgan St., Chicago, Ill. (See page 303.)
Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass.
Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."
Detroit Rubber Products Co., 565 Jefferson Ave. E., Detroit, Mich.
Hopewell Bros., Watertown, Mass. (See page 965.)
Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 835.)
McCormick-Allmand—See Robinson Mfg. Co.
Motor Products Corporation, 11801 Mack Ave., Detroit, Mich. (See page 757.)
Republic Rubber Co., Albert St., Youngstown, O.
Robinson Mfg. Co., Fourth & Jefferson Sts., Louisville, Ky. "McCormick-Allmand."
Sterling Top & Equipment Co., 518-23 W. 57th St., New York, N. Y.
Tatco—See Thomas Auto Top Co.

Everything is listed under the NOUN or principal word

STRIPS, Wind Shield Weather (Continued)

Ternstedt Mfg. Co., Detroit, Mich.
(See Back Cover.)
Thomas Auto Top Co., 417 E. Jackson St.,
Muncie, Ind. "Tatco."
Trico Products Corp., 624-28 Ellicott St., Buf-
falo, N. Y. "2-Way."
2-Way—See Trico Products Corp.
Tyler Mfg. Co., 755 Boylston St., Boston,
Mass. "Tymco."
Tymco—See Tyler Mfg. Co.
Vitalco—See Continental Rubber Works.

STRIPS, WOOD MOLDING—See Parts,
Wood Automobile

STRIPS, WOOD TACKING—See Parts,
Wood Automobile

STRUTS, STEERING GEAR—See Checks,
Steering Gear

STUD BOLT EXTRACTORS—See Extrac-
tors, Stud Bolt

SUIT CASE HOLDERS—See Holders, Suit
Case or Luggage

SUN SHIELDS—See Visors, Wind Shield

SUPPLEMENTARY SEATS—See Seats,
Supplementary

SUPPLEMENTARY SPRINGS—See Shock
Absorbers, Spring

SUPPLIES, Dealers and Jobbers in

(Comprising only Dealers and Jobbers in Automobile
Supplies who advertise in this publication)

Automobile Supply Co., S. Michigan Blvd.
at 16th St., Chicago, Ill. (See page 503.)
Automotive Electrical Sales Co., 2637 S.
Michigan Ave., Chicago, Ill.
(See page 337.)
Beckley-Ralston Co., Michigan Blvd. &
18th St., Chicago, Ill. (See page 498.)
Electric Appliance Co., Chicago, Ill.
(See page 47.)
Reinhard Bros. Co., 11-13 S. Ninth St.,
Minneapolis, Minn. (See page 495.)
Warszawsky & Co., 1915-31 S. State St.,
Chicago, Ill. (See page 495.)
Zinke Co., 1323-25 Michigan Ave., Chi-
cago, Ill. (See pages 769 to 774.)

SUPPLIES, Foundry

Brass Founders Supply Co., 357 Wilson Ave.,
Newark, N. J.
Foundry Equipment Co., 1831 Columbus Rd.,
Cleveland, O.
Hill & Griffith Co., C. H. & D. Ry. & Gent
St., Cincinnati, O.
Obermayer Co., E., 647 Ebans St., Cincinnati,
O.
Stevens, Frederick B., Third & Larned Sts.,
Detroit, Mich.
Woodison Co., E. J., 7415 St. Aubin St., De-
troit, Mich.

SUPPLY JOBBERS—See Jobbers, Supply

SUPPORTS, Brake Rods, for Fords

(To prevent rattling of brake rods)

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
Benford Auto Products, Inc., Mt. Vernon,
N. Y. (See page 645.)
Hill, H. E., Galesburg, Mich.
Illinois Brass Mfg. Co., 230 N. Ada St., Chi-
cago, Ill.
Nelson Mfg. Co., A., 2700 Southport Ave.,
Chicago, Ill.
Republic Auto Parts Co., 81-85 Tenth St.,
Long Island City, N. Y.
Whitehouse Mfg. Co., E. A., 42-54 Elm St.,
Newark, N. J. (See page 174.)

SUPPORTS, CAR—See Jacks, Tire Saving

**SUPPORTS, CRANK CASE REPAIR, FOR
FORDS**—See Brackets or Supports, En-
gine Repair

**SUPPORTS, DRIVE SHAFT TUBE FOR
FORDS**—See Braces, Drive Shaft Housing

SUPPORTS, ENGINE REPAIR FOR FORDS
—See Brackets or Supports, Engine Re-
pair

SUPPORTS or ARCH BARS, Hood

(Formed metal bar or ledge to fasten to dash board
to carry rear end of engine hood)

Crosby Co., Buffalo, N. Y. (See page 813.)
Hotchkiss Metal Form Co., 16 Jarvis St.,
Binghamton, N. Y.
Kirk & Blum, 2846 Spring Grove Ave., Cin-
cinnati, O.
Konigslow Mfg. Co., Otto, 3501 Perkins Ave.,
Cleveland, O.
Moline Pressed Steel Co., Fifth St., East Mo-
line, Ill.

SUPPORTS, RADIATOR, FOR FORDS—
See Cradles, Radiator

SUPPORTS, RADIUS RODS FOR FORDS—
See Rods, Radius

**SUPPORTS, RUNNING BOARD FOR
FORDS**—See Braces, Running Board

SUPPORTS, TOP FOR FORDS—See Fas-
teners, Top

SUPPORTS, Truck Body

(Supports or brackets for attaching body to frame)

C. M. & D.—See Chicago Mfg. & Distributing
Co.
Chicago Mfg. & Distributing Co., 411 S. San-
gamon St., Chicago, Ill. "C. M. & D."
Mayer Wagon Co., 6461 Frankstown Ave., E.
E. Pittsburgh, Pa.

SURFACE GAGES—See Gages, Surface

SURFACE GRINDERS—See Grinders, Sur-
face

SWEDGING PRESSES—See Presses, Bush-
ing Swedging

SWING FRAME GRINDERS—See Grinders,
Swing Frame

Everything is listed under the NOUN or principal word

Specialists on INSIDE Tire Reinforcements

THE CLIMAX

Line of RUBBER PRODUCTS

HAVE A REPUTATION UNEXCELLED FOR
Quality and Workmanship

Good TIRE SERVICE Assured

IF USED WITH EITHER—

CLIMAX PLAIN INNER TUBES

Red, Grey or "Natural" Color

Climax Compression Inner Tubes — do not heat,
pinch, creep or leak

MAXOTIRES—inside tires (not re-liners).

They encircle the tubes and lock by our
patented device. Prevent blow-outs,
pinches, chafing and kindred troubles.
Millions can testify to their worth.

SEND CARD TODAY FOR FACTS THAT WILL PROFIT YOU

Climax Products mean Better Business

THE CLIMAX RUBBER COMPANY

General Office: 21 W. Gay St., Columbus, Ohio

Factory: Delaware, Ohio
U. S. A.

Please mention The Automobile Trade Directory

SWITCH CONTROLS FOR FORDS—See Controls, Ignition Switch

SWITCH KEYS FOR FORDS—See Keys, Switch

SWITCH LOCKS FOR FORDS—See Locks, Switch and Coil

SWITCHES, ELECTRIC LOCK — See Switches, Lock

SWITCHES, ELECTRIC LOCK, FOR FORDS—See Locks, Switch and Coil

SWITCHES, Horn

(Special horn switch for attaching to steering column below the wheel and devised so it can be operated without removing the hands from the wheel.)

De Larue & Co., Thos., 33 W. 42d St., New York, N. Y. (Sole Distributors for Seng Auto Device Co., Chicago, Ill.)
Seng Auto Device Co.—See De Larue & Co.

SWITCHES, Horn for Fords

Gilbert & Sons Brass Foundry Co., A., St. Louis, Mo. (See page 215.)

SWITCHES, Ignition

(See also Switches, Steering Wheel)

Atwater Kent Mfg. Co., 4937 Stenton Ave., Philadelphia, Pa.

Basco—See Briggs & Stratton Co.

Briggs & Stratton Co., Milwaukee, Wis. "Basco." (See page 343.)

C-D—See Caskey-Dupree Mfg. Co.

Caskey-Dupree Mfg. Co., Marietta, O. "C-D."
Chicago Electric Mfg. Co., 2801-19 S. Halsted St., Chicago, Ill. "Handy."

Clum Mfg. Co., 23-25 Erie St., Milwaukee, Wis.
Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)

Couch Co., S. H., 170 Purchase St., Boston, Mass. "Puritan."

Fahnestock Electric Co., East Ave. & Eighth St., Long Island City, N. Y.

Handy—See Chicago Electric Mfg. Co.

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

Jefferson Electric Mfg. Co., 426-30 S. Green St., Chicago, Ill.

Manhattan Electrical Supply Co., 17 Park Pl., New York, N. Y.

Morse, Frank W., 289 Congress St., Boston, Mass. (See page 221.)

Puritan—See Couch Co.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

Splittorf Electrical Co., 98 Warren St., Newark, N. J.

Whitman, B. J., 141 Franklin St., Boston, Mass.

SWITCHES, KICK—See Switches, Ignition

SWITCHES, Light

(For turning on and off electric lights on car)

Accessories Mfg. Co., 2311-29 N. Crawford Ave., Chicago, Ill. (See page 289.)

Aid Mfg. Co., 2625-31 Stewart Ave., Chicago, Ill. "Amco." (See page 289.)

Amco—See Aid Mfg. Co.

Basco—See Briggs & Stratton Co.

Briggs & Stratton Co., Milwaukee, Wis. "Basco." (See page 343.)

C-D—See Caskey-Dupree Mfg. Co.

Caskey-Dupree Mfg. Co., Marietta, O. "C-D."
Chapman—See Morse, Frank W.

Chicago Electric Mfg. Co., 2801-19 S. Halsted St., Chicago, Ill. "Handy."

Clum Mfg. Co., 23-25 Erie St., Milwaukee, Wis.
Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)

Cowles & Co., C., New Haven, Conn. (See page 451.)

Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.

Cuno Engineering Corp., Meriden, Conn. (See page 525.)

Cutler Hammer Mfg. Co., 890 St. Paul Ave., Milwaukee, Wis.

Diamond H—See Hart Mfg. Co.

Eureka—See Morse, Frank W.

Fav Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for Culver-Stearns Switches.) (See page 429.)

H & H—See Hart & Hegeman Mfg. Co.

Handy—See Chicago Electric Mfg. Co.

Hart Mfg. Co., Hamilton St., Hartford, Conn. "Diamond H."

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn. "H. & H."

Hartman Electrical Mfg. Co., 31 E. Fifth St., Mansfield, O.

Higginson-Gibson Mfg. Co., 76 Atherton St. (Jamaica Plain), Boston, Mass.

Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.

L-N—See Leece-Neville Co.

Leece-Neville Co., 5363 Hamilton Ave., Cleveland, O. "L-N."

Morse, Frank W., 289 Congress St., Boston, Mass. "Chapman," "Eureka," "Puritan," "Pullrite," "Starite." (See page 221.)

Motor Specialties Co., Beaver St., Waltham, Mass.

North East Electric Co., Rochester, N. Y.

O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.

Pullrite—See Morse, Frank W.

Puritan—See Morse, Frank W.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco." (See page 459.)

Starite—See Morse, Frank W.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)

Whitman, B. J., 141 Franklin St., Boston, Mass.

SWITCHES, Lock

(Ignition switches equipped with lock to prevent unauthorized use of car)

American Devices National Sales Syndicate, 220 S. State St., Chicago, Ill. (See page 547.)

Bo-Hart Auto & Machine Co., Lancaster, N. Y.

Clum Mfg. Co., 23-25 Erie St., Milwaukee, Wis.

Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)

Cox Mfg. Co., 3138 Payne Ave., Cleveland, O. "Motolok." (See page 835.)

Davis—See National Auto Combination Lock Co.

Delta-Star Electric Co., 617-81 W. Jackson Blvd., Chicago, Ill.

Everything is listed under the NOUN or principal word

Motolok Ignition Control



Circuits Operated with Yale Key.
No Secondary Operations. Com-
plies with All Local Ordinances
and Insurance Requirements.

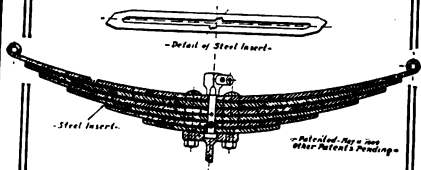
COX MFG. CO., 3138 Payne Ave., Cleveland

Generator Tubing
Gaskets
Pedal Pads
Pedal Pads for Fords
Weather Strips
Rubber Tubing (acid
proof)
Bumpers (rubber)
Washers (tire pumps)
Cement Rubber
Repair Patches
Special rubber goods
molded to blue print

**Industrial Rubber
Goods Co.**

Broad St., St. Joseph, Mich.

BETWEEN YOU AND THE ROAD CENTER-FED SPRING INSERTS



You cannot expect satisfactory results from your springs if not properly lubricated, as they are so constructed of leaves to receive all road shocks by sliding one against the other.

Users of CENTER-FED SPRING INSERTS claim their cars have increased in efficiency 50 to 100 per cent, a large percentage of spring breakage is eliminated, and will save on your tires and repair bills. The Inserts are made of steel running full length of each leaf, allowing the oil to be forced to the center of the leaves, keeping the spring lubricated at the friction points; they do not change the spring construction; are easy to install; will last the life of the spring, and are made to fit all makes of cars.

Write for Full Details
Territory Open for Dealers

CENTER-FED SPRING INSERT SALES CO.
Coal Exchange Building
WILKESBARRE PENNSYLVANIA

*One Copy of
Your Catalog*
—IF YOU PLEASE

**THE AUTOMOBILE
TRADE DIRECTORY**
239 West 39th St., New York

AN easy way in which the manufacturer may keep his buyers informed of what he is doing, of what he has to offer them in the way of new goods, is to keep sending us, regularly, his catalogs and other selling literature.

This gives us an opportunity to make changes and additions and to insure the correctness of our classification of the manufacturer's various products. Your catalog in our files is a cheap insurance against the possibility of error and omission. SEND US YOUR CATALOGS.

Please mention The Automobile Trade Directory

Westinghouse

STARTING, LIGHTING & IGNITION EQUIPMENT

Main and Branch Offices

Automotive Equipment Department
General Sales and Service Offices,
82 Worthington St., Springfield, Mass.



Cleveland, Ohio
1900 Euclid Ave.

Detroit, Michigan
1109 Kresge Bldg.

Chicago, Illinois
Conway Bldg.

Indianapolis, Ind.
1103 City Trust Bldg.

Service Stations

ALABAMA

Birmingham—Birmingham Electric Battery Co., 2016 Ave. B.
Mobile—Mobile Electric Garage, 204 North Royal Street.
Montgomery—Minto & Kratz, 319 Moulton Street.
Selma—Selma Electric Battery Co., 1002 Water Street.

ARIZONA

Globe—Elec. Equip. Co. of Arizona.
Mesa—Elec. Equip. Co. of Arizona.
Nogales—Elec. Equip. Co. of Arizona.
Phoenix—Elec. Equip. Co. of Arizona.
Tucson—Elec. Equip. Co. of Arizona.

ARKANSAS

Ft. Smith—Electric Service Co., 917 N. Ave.
Little Rock—Arkansas Battery Co., Inc., 411 Center Street.

CALIFORNIA

Anaheim—Auto. Elect. Co., 234 So. Los Angeles
Bakersfield—Auto Service Co., 1906 19th St.
El Centro—Electrical Service Co., 615 State Street.
Fresno—Electric Laboratories, Inc., 1347 Van Ness Street. (Sub.)
Lindsay—Central Calif. Electric Co.
Long Beach—Automotive Electric Co., 227 East Broadway.
Los Angeles—Electric Equipment Co., 1240 South Hope Street.
Oakland—Barkmann & Wagner, 21st & Webster Streets.
Pasadena—Pasadena Battery & Ignition Co., 754 East Colorado Street.
Riverside—Haymond & Sands, 768 West 10th Street.
Sacramento—Sacramento Motor Service, 815 L Street.
San Francisco—Automotive Service Agency, Van Ness & O'Farrell Sts.
Santa Anna—McClay Ignition Works, 406 Birch Street.
Santa Barbara—Auto Electric Service, 232 State Street.
San Bernardino—Fisher Automotive Electric Company, 932 State St.
San Diego—Carlson & Simpson, Union & C. Sts.
San Jose—Auto Electric Service Co., 471 South 1st Street.
Santa Rosa—Motor Car Electric Co., 101 Main Street.
Stockton—Wilson-Shultz & Co., Miner Avenue & San Joaquin Sts.
Visalia—Central Calif. Electric Co., 116 South Locust Street. (Sub.)

COLORADO

Colorado Springs—Cascade Auto Co., 115 North Cascade Avenue.
Denver—Electric & Service Eng. Co., 1313 Broadway.
Ft. Morgan—Williams Battery Service, 401 N. Grand Street.
Greely—Exide Electric Service Sta., 1015 8th Avenue.
Yuma—Beehler Electrical Equip. Co.

CONNECTICUT

Bridgeport—Kraus & D'Elia Electric Co., 177 Cannon Street.
Hartford—Electric Parts & Service Co., 112 Ann Street.
New Haven—New Haven Electric Co., 296 Elm Street.
Stamford—Stamford Electric Contractor, Inc., 66 W. Main Street

Waterbury—Auto Electric Co., 451 Meadow Street.

DELAWARE

Wilmington—Wilmington Storage Battery, 830 Tatnall Street.

DISTRICT OF COLUMBIA

Washington—Miller-Dudley Co., 1716 14th Street, N. W.

FLORIDA

Jacksonville—The Magneto Exchange, 223 West Adams Street.
Miami—Electric Equipment Co., 50 First Street S. E.
Tampa—The Electric Service Co., Inc., 901 Florida Avenue.

GEORGIA

Atlanta—Paul D. O'Kelley Co., 45 Auburn Avenue.
Augusta—Lunday Elec. Service Co., 507 Broad Street.
Columbus—Columbus Battery & Macon—Wade & Co., 566 Second St.

IDAHOO

Boise—Oakley & Sons, 11th and Idaho Streets.
Idaho Falls—B. B. Light Co., 210C St.
Pocatello—Edwards-Warden Motor Parts Co., 541 East Center Street.

ILLINOIS

Bloomington—Heery & Moore, 519 N. Prairie Street.
Champaign—Paul J. Strahle Co., 342 N. Hickory Street.
Chicago—Arthur Jones Electric Co., 2925 Calumet Avenue.
Chicago—C. & E. Automotive Elec. Co., 4645 Washington Blvd.
Decatur—Electric Service Co., 345 E. William Street.
Evanston—Drew & Nee Automotive Elec. Service., 1119 Chicago Ave.
Galesburg—Hober & Marry, 136 S. Prairie Street.
Kankakee—Fort in Brothers Garage, 150 East Station.
Lincoln—United Battery & Electric Co., 614 Broadway.
Ottawa—Ottawa Elec. Co., 306 Main St.
Peoria—Electrical Testing Co., 309 Knoxville Avenue.
Quincy—Abbott Electric Co., 719 Madison Street.
Rockford—Rockford Battery & Electric Co., 313 Market Street.
Springfield—Chapin Electric Garage, 407 E. Jackson Street.

INDIANA

Anderson—Fulwider-Grimes Battery Co., 30 East 9th Street.
Elkhart—Auto Specialties Co., 216 Tyler Avenue.
Evansville—Automobile Electric Corp., 312 Water Street.
Ft. Wayne—Auto Electric Service Co., 730 Barr St.
Indianapolis—Automotive Parts & Elec. Service Corp., 721 North Illinois Street.
Rimmond—Chenoweth Electric Service Co., 1113 Main Street.
South Bend—U. S. Electric Co., 126 Jefferson Street.

IOWA

Burlington—Paul Jones Electric Co., 209 Division Street.
Cedar Rapids—Monroe Battery Co., 3rd St. and 5th Avenue.
Davenport—Johnson Motor Service Co., Front and Brady Streets.
Des Moines—Claiborne-Reno Co., 1023 Locust Street.

Dubuque—Kerper Elec. Co., Cor. 8th & Bluff Streets.
Ft. Dodge—The Auto Electric Service Co., 140 First Avenue South.
Grinnell—Biddwell Electric Co.
Mason City—O. Gregerson, 423 Fourth St., S. W.
Ottumwa—Friday Batt. & Elec. Corp.
Main & Wash. Sts.
Siagoourney—Friday Batt. & Elec. Corp.
Sioux City—Arthur Electric Service Co., 715 Pearl Street.
Waterloo—Central Battery & Electric Co., 318 East Fifth Street.

KANSAS

Arkansas City—Mears Brothers, 407 S. Summit Street.
Atchison—C. C. Gerber, 106 South 7th Street.
Clay Center—Miller Co., 4th & Lincoln Streets.
Fort Scott—Johnson & House, 9th & Market Streets.
Great Bend—Archer Electric Company, 1911 Blakin St.
Holton—Holton Battery & Starter Service.
Manhattan—Keele The Battery Man.
Pittsburgh—Albers Electric Service Co., 105 East Fifth Street.
Salina—The Spray Electric Co., 215 Topeka—Keele Electric Co., 215 West 6th Street.
Wichita—E. S. Cowie Electric Co., 317 South Market.

KENTUCKY

Louisville—Hunter-Kiefer Co., 430 East Broadway.

LOUISIANA

New Orleans—Suhren, Inc., 1050 Carondelet Street.
Shreveport—The Southern Battery Co., 900 Texas Avenue.

MAINE

Augusta—Weber's Auto Electric Service, 10 Dickman Street.
Bangor—Arvid L. Ebbeson, 225 Main Street.
Portland—L. W. Cleveland, 441 Congress Street.

MARYLAND

Baltimore—Automotive Engineering Co., 1727 North Charles Street.
Cumberland—Treiber Electric Service Co., 148 Mechanic Street

MASSACHUSETTS

Beacon—Jackson Electric Co., 711 Beacon Street.
Brocton—Harrison R. Barker, 42 Cottage St.
Lawrence—Louis P. Berwick, 388 Lawrence St.
New Bedford—Auto Electric Service Station, 25 High Street.
Springfield—Krohns Service Station, 61 Pecousic Street.
Worcester—Jenkins & Robinson, 69 Central Avenue.

MICHIGAN

Detroit—Auto Electric & Service Corp., 91 Selden Avenue.
Detroit—United Elec. Service Co., 44 Brady Street.
Flint—United Electric Serv. Co.
Grand Rapids—Heth Auto Elec. Co., 236 Ottawa Street, N. W.
Jackson—Chapel Electric Company, 141 W. Pearl St.
Kalamazoo—Kalamazoo Storage Battery Co., 420 Main Street.

Please mention The Automobile Trade Directory

Lansing—Auto Electric Company,
118 E. Ottawa Street.
Port Huron—Sparling Auto Elec. Co.
Pontiac—Adams Brothers.
Saginaw—Trombley Elec. Co.

MINNESOTA

Duluth—United Electric Service Co.,
747 East Superior Street.
Minneapolis—The Northern Battery
Service Co., 8 East Grant St.

MISSISSIPPI

Jackson—Noel Repair Shop, 119
South Faust Street.

MISSOURI

Joplin—Sorber-Kuhn Auto Supply
Co., 5th and Wall Streets.
Kansas City—E. S. Cowie Electric
Co., 1816 McGee Street.
Springfield—Seebree Battery & Elec-
tric Co., 451 St. Louis Street.
St. Joseph—Utz Electrical Co., 12th
& Farson Street.
St. Louis—Automotive Electrical
Service Co., Inc., 2129 Locust St.

MONTANA

Billings—The Electric Service Co.,
14 N. 30th Street.
Great Falls—Great Falls Starter &
Battery Co., 320 First Avenue.
Helena—W. E. Chase Co., 11 Placer
Street.
Lewistown—Electric Service Station,
110 4th Avenue.

NEBRASKA

Hastings—United Electric Service
Co., 817 West 3rd Street.
Lincoln—Randall & Noll, 317 South
11th Street.
Omaha—Auto Electric Service Co.,
2205 Farnum Street.

NEW JERSEY

Atlantic City—Geo. Hoefler Co.,
1821 Atlantic Ave.
Asbury Park—Mark Guy Co., 21
Main Street.
Elizabeth—Jengeto & Generator Rep-
air Co., 1152 Elizabeth Ave.
Newark—Barter-Oppenheim, Inc., 243
Central Avenue.
New Brunswick—Middlesex Batt. &
Sup. Co., cor. George & Oliver Sts.
Paterson—Magneto & Starter Repair
Co., 223 Van Houten Street.
Trenton—J. Harry Hearnen, cor.
Warren & Front Streets.

NEW HAMPSHIRE

Manchester—Ernest E. Austin, 123
Canal Street.

NEW YORK

Albany—J. M. Steinhart, 296 Central
Ave.
Bronx, New York City—Empire
State Ignition Corp., 2400 Grand
Concourse (Sub.).
Brooklyn—McFarland - Clum Com-
pany, 761 Park Place.
Brooklyn—G. F. Richardson, 1740
Cornelia St.
Buffalo—Meinhard Auto Supply
Corp., 846 Main Street.
Elmira—Elmira Auto Ignition Ser-
vice, 105 East First Street.
Jamestown—Lindquist Electric Co.,
208 Washington Street.
Jamaica—Auto Electric Service Co.
6 Twombly Place.
Long Island City—Steiner Electric
Corporation, 592 Jackson Ave.
Middletown—Electric Auto Systems
Service, Inc., 11 Center Street.
Mt. Vernon—J. D. Pettet, 1 F. Sid-
ney Ave.
New York—P. J. Durham Co.,
244 West 49th Street.
New York—V. C. Bernardi, 66 West
Third Street.
Patchogue—Electric Garage, 55 E.
Main Street.
Poughkeepsie—Pease Electric Service
Co., 27 New Market Street.
Rochester—J. Lawrence Hill Co.,
21 Plymouth Avenue.
Syracuse—Burr Fowler Co., 145 Sey-
mour Street.
Trenton—H. W. Boudry, 2817 6th Ave.
Utica—Stelfwater Electric Co., Inc.,
322 Lafayette Street.
Watertown—Watertown Battery &
Elec. Co., 1313 State Street.

NORTH CAROLINA

Asheville—Asheville Battery Co.,
College and Market Streets.
Charlotte—Garrett's Service Station,
327 East Trade Street.
Fayetteville—Fayetteville Storage
Battery, 228 Hay St.
Greensboro—Dixie Sales Co., 109
So. Davis Street.
Lumberton—Battery Service Co.,
Westgate-Jarvis Storage Battery
Co., 229 So. Liberty Street.
Wilmington—W. M. McIntire, 5
Dock Street.

NORTH DAKOTA

Fargo—Fargo Plumbing & Heating
Co., 123 Broadway.
Bismarck—Otto Dirlam, 218 Main St.

OHIO

Akron—A. M. Allen Electric Co.,
25 S. Prospect St.
Canton—Mook Electric Supply Co.,
513 W. 4th St., N. W.
Cincinnati—The Boyle Engineering
Co., 2023 Reading Road.
Cleveland—The Blasinger Co., 1753
E. 21st St.
Columbus—The Blasinger Co., 118
East Spring Street.
Dayton—Herbert F. Apple, 427 East
Street.
East Liverpool—Seedley Battery Co.,
414 East 6th Street.
Lima—Beckman Electric Co., 124
South Central Avenue.
New Philadelphia—West End Garage,
726 West Fair Street.
Springfield—National Electric Co.,
924 West Main Street.
Tulsa—Tulsa Electric Service Sta-
tion, 89 Jefferson Street.
Toledo—Electric Power Maintenance
Co., 11th and Monroe Streets.
Youngstown—Auto Ignition Co.,
28 Pyatt Street.
Zanesville—Weller Battery & Ignition
35 South Third Street.

OKLAHOMA

Muskogee—Wood-Brison Battery
Co., 440 West Broadway.
Oklahoma City—Johnson Electric
Co., 718 North Broadway.
Okmulgee—Sooner Battery & Elec-
tric Co., 317 W. 7th Street.
Tulsa—Walsh Electric Co., 919 South
Main Street.

OREGON

Pendleton—William E. Chase Co.,
320 East Court Street.
Portland—Sunset Electric Co., 9th
and Glisan Streets.

PENNSYLVANIA

Allentown—Electric Equipment &
Service Co., 727 Linden Avenue.
Altoona—J. C. Mullen Motor Co.,
1001 18th Street.
Erie—Briggs United Service, 206
West 12th Street.
Greensburg—J. W. Patton (Sub.).
Harrisburg—Auto Electric Service
Co., 17th & Kelly Streets.
Johnstown—Smith's Fireproof Gar-
age, 208 Main Street.
Lancaster—Electric Equipment Co.,
44 North Prince Street.
McKeesport—Sisson & Berry Bat-
tery Service Company, 604 Market
St. (Sub.).
Philadelphia—Auto Equipment Ser-
vice Co., 1421 North Broad Street.
Pittsburgh—The Electric Equipment
Service Co., 915 Pennwood Ave.,
Wilkinsburg.
Punxsutawney—Jones Electrical Ser-
vice Station, 225 West Liberty St.
Reading—Berks Auto & Ignition Co.,
514 Cherry Street.
Scranton—Scranton Auto Ignition
Co., 317 Adams St.
Sharon—Sharon Auto Electric Ser-
vice, 43 Vine Street.
St. Paul—The Northern Battery
Service Co., 331 West 9th Street.
Tarentum—Tarentum Service Co.,
Unlontown—Reed Automotive Ser-
vice, 97 West Main Street.
Warren—The Post Office Garage,
Market & Penn Streets.
Wilkes-Barre—Kittsee Electric Co., 54
N. Main Street.
Williamsport—Harer Wurster, Cor.
3rd and Hepburn Streets.

York—The York Storage Battery
Co., 352 West Market Street.

RHODE ISLAND

Providence—Magneto Parts Co., of
R. I., 101 Fountain Street.

SOUTH CAROLINA

Bennettville—Battery Tire & Service
Co., Cor. Marlboro & Market Sts.
Charleston—The Gas Engine & Elec-
tric Co., 280 Meeting Street.
Columbia—Auto Electric Co., Inc.,
1216 Hampton Avenue.
Greenville—Battery & Elec. Co.,
514 S. Main Street.
Greenwood—Auto Electric Co., Mar-
well Ave.
Sumter—J. C. Brown, 146 So. Main
Street.

SOUTH DAKOTA

Aberdeen—Detwiler Auto Electric
Service Co., 112 Third Ave., S. W.
Deadwood—Maitland Garage & Elec-
tric Service Station.
Sioux Falls—Auto Electric Service,
Inc., 200 No. Dakota Street.
Watertown—Hansen Auto Electric
Co., 319 Third Street.

TENNESSEE

Chattanooga—McKenney Auto Elec.
Co., 502 Broad Street.
Knoxville—McNutt & Co., 317 W.
Cumberland Ave.
Memphis—Southern Electric Service
Co., 927 Union Ave.
Nashville—Automobile Electric Ser-
vice Co., 1315 Broadway.

TEXAS

Ablene—Carter's Auto Elec. Service,
5th and Pine Streets.
Beaumont—Electric Specialty Co.,
396 Tevis Street.
Dallas—Otto A. Hille Co., 1711
Young Street.
El Paso—Western Battery & Mag-
neto Co., Missouri & Kansas Sts.
Ft. Worth—Starter Service Co., 38
Jennings Avenue.
Houston—T. Electric Co., 602 Pres-
ton Avenue.
Plainview—Conner-Mathes Co., 613
Austin Street.
San Antonio—Bagdale A. Co. Supply
Co., 8 Concho Street.
San Antonio—S. X. Callahan, North
Flores Street.
Waco—Beard & Stone Elec. Co., 116
South Ninth Street.
Wichita Falls—Electric Service Sta-
tion, 1100 Scott Avenue.

UTAH

Salt Lake City—Intermountain Elec-
tric Co., 45 East 4th Street.

VIRGINIA

Norfolk—Reliance Electric Co., 522
Harrington Avenue.
Richmond—W. M. Reynold, Inc.,
1839 W. Broad Street.
Roanoke—Stoke Elec. Co., 505 Com-
merce Street.

VERMONT

Burlington—Brodie & Niles Co., Inc.,
125 St. Paul Street.

WASHINGTON

Seattle—Sunset Electric Co., 1507
Broadway.
Spokane—Automotive Elec. Serv.
Corp., 218 Madison Street.
Tacoma—Tacoma Auto Electric Co.,
705 Pacific Avenue.
Yakima—Wm. E. Chase Co., 204
West Yakima Avenue.
Walla Walla—Wm. E. Chase of
Walla Walla, 114 E. Alder Street.

WEST VIRGINIA

Wheeling—McKelvy-Ewing Electric
Co., 93 Market Street.

WISCONSIN

Beloit—C. S. Fiske Electric Co.,
417 East Grand Ave.
Green Bay—R. T. Sales Co., 226
North Adam St.
Madison—Auto Electric Service Co.,
124 West Main Street.
Milwaukee—Wisconsin Magneto Co.,
528 Milwaukee Street.
Sheboygan—Acker Electrical Co.,
506 North 8th Street.

Westinghouse

STARTING, LIGHTING & IGNITION EQUIPMENT

Please mention The Automobile Trade Directory

SWITCHES, Lock (Continued)

Esco Mfg. Co., 228 Farnsworth St., Detroit, Mich.
 Hubbell, Harvey, State St. & Bostwick Ave., Bridgeport, Conn.
 Merkrum Co., 1410 Wrightwood Ave., Chicago, Ill.
 Motolok—See Cox Mfg. Co.
 National Auto Combination Lock Co., E. Tenth St. & 31st Ave., Oakland, Cal. "Davis."
 Scott Corp., 1534 W. Lake St., Chicago, Ill. "Telecator."
 Telecator—See Scott Corp.

SWITCHES, LOCK, FOR FORDS—See Locks, Switch and Coil**SWITCHES, Spark Plug**

(Small switches for attaching to spark plug to facilitate the testing of the ignition)

Bailey Co., W. J., Newark, N. J. "C. B."
 C. B.—See Bailey Co.
 Locke Mfg. Co., Ravenna, O.
 Means, Eugene D., Towanda, Pa.

SWITCHES, Starter

(See also Starters, Electric.)

Basco—See Briggs & Stratton Co.
 Briggs & Stratton Co., Milwaukee, Wis. "Basco." (See page 343.)
 Cuno Engineering Corp., Meriden, Conn. (See page 525.)
 Diamond H.—See Hart Mfg. Co.
 H & H—See Hart & Hegeman Mfg. Co.
 Hart Mfg. Co., Hamilton St., Hartford, Conn. "Diamond H."
 Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn. "H & H."
 Hartman Electrical Mfg. Co., 31 E. Fifth St., Mansfield, O.
 I-C—See Industrial Controller Co.
 Industrial Controller Co., 886 Greenbush St., Milwaukee, Wis. "I-C."

SWITCHES, Steering Wheel

(Ignition Switches for attachment to Steering Wheel)

Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)
 Culver-Stearns Mfg. Co., 53 Grafton St., Worcester, Mass.
 Fav Co., J. H., 27 Warren St., New York, N. Y. (Eastern and Southern Distributor for Culver-Stearns Switches.) (See page 429.)

SWIVEL JOINTS—See Joints, Speedometer Swivel**SWIVEL LAMPS—See Lights, Spot****SWIVEL LIGHTS—See Lights, Spot****SWIVEL SEARCHLIGHTS—See Lights, Spot****SYSTEMS, ACCOUNTING—See Books, Accounting and Cost Systems****SYSTEMS, Battery Ignition**

(See Coils, Spark; also Timers, Ignition. For combined ignition and starting systems—See Starters, Electric Ignition)

Akar Ignition Co., 157 W. Berkley St., Philadelphia, Pa.
 American Bosch Magneto Corp. (Brightwood) Springfield, Mass. "Bosch."
 Bosch—See American Bosch Magneto Corp.
 Atwater Kent Mfg. Co., 4937 Stanton Ave., Philadelphia, Pa. "Unisparker."
 Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)
 Dayton Engineering Laboratories Co., 331 E. First St., Dayton, O. "Delco."
 Delco—See Dayton Engineering Laboratories Co.
 Kingston—See Kokomo Electric Co.
 Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."
 McCarthy Bros. & Wilson, 2241 N. Broad St., Philadelphia, Pa., (Penn., Del., Md., N. J., Va. and District of Columbia. Distributors for Philbrin Systems.) (See page 715.)
 New York Coll Co., 335-40 Pearl St., New York, N. Y. "Rhodes."
 North East Electric Co., Rochester, N. Y.
 Philbrin Corp., 507 S. Broad St., Kennett Square, Pa. (See page 841.)
 Remy Electric Co., 1623 E. Grand Blvd., Detroit, Mich.
 Rhodes—See New York Coll Co.
 Unisparker—See Atwater Kent Mfg. Co.
 Wagner Electric Mfg. Co., 6400 Plymouth Ave., St. Louis, Mo.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)

SYSTEMS, Battery Ignition, for Fords

(See Coils, Spark; also Timers, Ignition. For combined ignition and starting systems—See Starters, Electric)

Atwater Kent Mfg. Co., 4937 Stanton Ave., Philadelphia, Pa.
 Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)
 Kingston—See Kokomo Electric Co.
 Kokomo Electric Co., 1450 N. Webster St., Kokomo, Ind. "Kingston."
 McCarthy Bros. & Wilson, 2241 N. Broad St., Philadelphia, Pa., (Penn., Del., Md., N. J., Va. and District of Columbia. Distributors for Philbrin Systems.) (See page 715.)
 Miller Auto Electric Mfg. Co., 1406 W. Pico St., Los Angeles, Cal.
 New York Coll Co., 335-40 Pearl St., New York, N. Y. "Rhodes."
 Philbrin Corp., 507 S. Broad St., Kennett Square, Pa. (See page 841.)
 Rhodes—See New York Coll Co.
 Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)

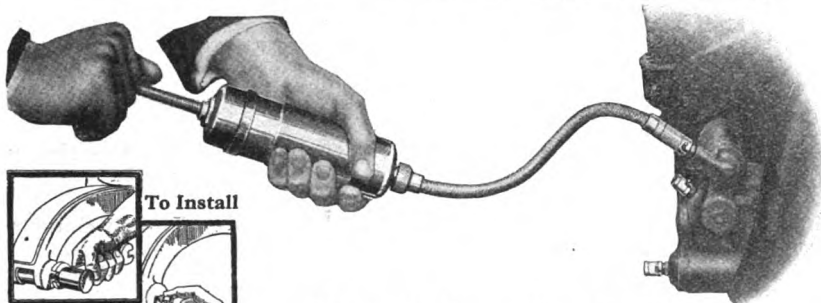
SYSTEMS, BILLING—See Books, Accounting and Cost Systems**SYSTEMS, Chassis Lubricating**

Advanced Products Corp., 1203 N. Carlisle St., Philadelphia, Pa. "Vanoller."
 Alemite—See Bassick Mfg. Co.
 Bassick Mfg. Co., 361 W. Superior St., Chicago, Ill. "Alemite." (See page 839.)

Everything is listed under the NOUN or principal word

ALEMITE

High Pressure Lubricating System



To Install

First This



Then This



BASSICK LUBRICANT

Is high grade grease. Free from all impurities. Patented container for quickly and easily filling the Alemite Compressor.



BASSICK Shur-Lite CIGAR LIGHTER

A wireless, handy cigar lighter that plugs in from the instrument board. Ready for use in a jiffy.



BASSICK GAS-CO-LATOR

Filters the gasoline upward through channels just before it reaches the carburetor. Removes all other impurities.



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For squeaky springs. Spreads and penetrates to every part. Dissolves rust instantly and leaves a film of dry graphite, which lubricates and prevents the formation of further rust.

Positive Lubrication In Less Than 30 Minutes

ALEMITE eliminates all the drudgery of under-car greasing, and the dirt and muss of oil or grease cups.

ALEMITE forces clean, wear-saving grease into the bearing, under a pressure of 500 pounds if necessary, pushing out all the old, grit-laden grease. Every chassis bearing can be lubricated in less than 30 minutes.

ALEMITE is easily installed by anyone, and operation is equally simple. Just attach the flexible steel hose and turn the compressor handle.

ALEMITE is made up in sets ready to install on any size car, truck or tractor. Nearly 200 leading manufacturers of cars, trucks and tractors have adopted the ALEMITE High Pressure Lubricating System as standard equipment.

Ask your dealer, garage or repair man or write the nearest distributor listed below.

THE BASSICK MANUFACTURING COMPANY
361 WEST SUPERIOR STREET CHICAGO, ILL.

Address Alemite Lubricator Company, at address below:

Baltimore, Md. 106 W. Mt. Royal Ave.	El Paso, Tex. 403 Texas St.	Omaha, Neb. 2864-66 Farnam St.
Boston, Massachusetts 35 Cambridge St.	Fargo, N. Dak. 324 N. Pacific Ave.	Philadelphia, Pa. 824 N. Broad St.
Bridgeport, Conn. 677 Fairfield Ave.	Indianapolis, Ind. 423 N. Meridian St.	Portland, Ore. 312 East Pike St.
Buffalo, New York 906 Main St.	Jacksonville, Fla. 904 Main St.	St. Louis, Mo. 2822-24 Locust St.
Butte, Montana 55 W. Granite St.	Kansas City, Mo. 1506 McGee St.	St. Paul, Minn. 231-35 W. Ninth St.
Calgary, Alta. Can. 218 12th Ave. W.	Los Angeles, Cal. 1138 S. Figueroa St.	Salt Lake City, Utah 32-34 S. W. Temple St.
Alemite Lubricator Co. of Can. N. W. Carolina & Carolina 197 King St.	Leavenworth, Ky. 543 South Third St.	San Francisco, Cal. 824 Van Ness Ave.
Chicago, Ill. 2841 S. Michigan Ave.	Minneapolis, Minn. 465 Broadway	Seattle, Wash. 312 East Pike St.
Cleveland, Ohio 4612 Euclid Ave.	Minneapolis, Minn. 208 S. Tenth St.	Toronto, Canada 53-57 Adelaide St.
Dallas, Texas 408 S. Ervay St.	Montreal, Can. 321 St. James St.	John Millen & Son, Ltd.
Denver, Colorado 1245 Broadway	Newark, N. J. 228-230 Halsey St.	Sidney, Australia Bennett & Wood
Detroit, Mich. 4750 Woodward Ave.	New Orleans, La. 637 St. Charles St.	Isle of Malta Mamo Bros.
Des Moines, Ia. 1727 W. Grand Ave.	New York 1780 Broadway *See Below	Johannesburg, S. Africa Williams & Hunt

*The Bassick Service Corp., 1780 Broadway

Please mention The Automobile Trade Directory

SYSTEMS, Chassis Lubricating (Continued)

Bowen Products Corp., Auburn, N. Y., "Empress." (See page 313.)
 Carr Fastener Co., Boston, Mass. "Dot." (See page 371.)

Critz—See Lathan Auto Supply Co.
 Dot—See Carr Fastener Co.

Empress—See Bowen Products Corp.

Grees Gun—See Ireland & Matthews Mfg. Co.
 Ireland & Matthews Mfg. Co., Beard & Chatfield Sts., Detroit, Mich. "Grees Gun."

Lathan Auto Supply Co., 1521-27 Van Ness Ave., San Francisco, Cal. "Critz."
 M & E—See Merchant & Evans Co.

Manzell Bros. Co., 309 Beard Ave., Buffalo, N. Y.

Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. "M & E."

O. K. Mfg. Co., 40 Potomac St., Dayton, O.

Rhode Island Machine & Tool Co.—See Rimtco Lubricator Co.

Rimtco Lubricator Co., 739 Boylston St., Boston, Mass. (Sole Distributor for Rhode Island Machine & Tool Co., Woonsocket, R. I.)

Roberts & Monroe, 35 Warren St., New York, N. Y. "Romon."

Romon—See Roberts & Monroe.

Semco-Skelly—See Smith & Egge Mfg. Co.

Smith & Egge Mfg. Co., 556 Lafayette St., Bridgeport, Conn. "Semco-Skelly."

Vanoller—See Advanced Products Corp.

SYSTEMS, Chassis Lubricating for Fords

Forc-Ful—See Zinke Co.

I. C. Mfg. Co.—See Zinke Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for I. C. Mfg. Co., Chicago, Ill. "Forc-Ful.")

SYSTEMS, COST—See Books, Accounting and Cost Systems**SYSTEMS, DRYING—See Rooms, Paint & Varnish Drying****SYSTEMS, Electric Lighting**

(See also *Dynamos, Electric Lighting; also Starters, Electric*)

Critz—See Lathan Auto Supply Co.

Dayton Engineering Laboratories Co., 339 E. First St., Dayton, O. "Delco."

Delco—See Dayton Engineering Laboratories Co.

Dyneto Electric Corp., Syracuse, N. Y.

Holtzer-Cabot Electric Co., 125 Armory St., Boston, Mass.

Its Manufacturers, Glen Ellyn, Ill.

L-N—See Leece-Neville Co.

Lathan Auto Supply Co., 1521-27 Van Ness Ave., San Francisco, Cal. "Critz."

Leece-Neville Co., 5568 Hamilton Ave., Cleveland, O. "L-N."

Leonard Electric Co., Ward, Mt. Vernon, N. Y.

North East Electric Co., Rochester, N. Y.

Titan Engineering Co., 603 W. Pearl St., Union City, Ind.

Vesta Battery Corp., 2100 Indiana Ave., Chicago, Ill.

Westinghouse Electric & Mfg. Co., 82 Worthington St., Springfield, Mass. (See pages 836 and 837.)

SYSTEMS, GASOLINE FEED—See Tanks Vacuum; also Systems, Magnetic Pump; also Regulators, Tank Pressure

SYSTEMS, GASOLINE STORAGE—See Tanks, Fuel Storage

SYSTEMS, IGNITION—See Coils, Spark; also Timers; also Magnetos; also Systems, Battery Ignition

SYSTEMS, KEROSENE, FOR FORDS—See Carbureters, Kerosene; also Heaters, Mixture; also Manifolds, Intake and Exhaust

SYSTEMS, LIGHTING—See Systems, Electric Lighting

SYSTEMS, LUBRICATING CHASSIS—See Systems, Chassis Lubricating

SYSTEMS, Magnetic Pump Gasoline

(For Vacuum Tanks—See Tanks, Vacuum)

Motor Cooling System Co., Charles & Lombard Sts., Baltimore, Md.

SYSTEMS, OIL—See Tanks and Systems, Oil

SYSTEMS, OVERHEAD WIRING FOR FORDS—See Sets, Wiring

SYSTEMS, SINGLE SPARK IGNITION—See Systems, Battery Ignition

TABLES, LUNCH—See Tables, Picnic

TABLES, Picnic and Lunch

Affa Specialty Co., 34 Southbridge St., Worcester, Mass.

Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Burch Mfg. Co., F. J., First St. & Santa Fe Ave., Pueblo, Colo.

Handy-Pandy—See Pandolfo Mfg. Co.

Pandolfo Mfg. Co., St. Cloud, Minn. "Handy-Pandy."

Puffer-Hubbard Mfg. Co., 26th St. & 32d Ave., S., Minneapolis, Minn.

Porter, G. H., 274 15th Ave., San Francisco, Cal.

TACHOMETERS

Blanchard Instrument Co., 7 Deacon St., Cambridge, Mass.

Consolidated Instrument Co. of America, 461 Eighth Ave., New York, N. Y. (Sole Selling Agents for Jones, Joseph W., New York, N. Y.) (Also Importers for Hasler Tachometers.) (See page 841.)

Hasler—See Consolidated Instrument Co. of America.

Jones, Joseph W.—See Consolidated Instrument Co. of America.

TACKS, Upholstery

Anchor—See North-Judd Mfg. Co.

Atlas Tack Corp., Fairhaven, Mass. "Metal leather."

Auto-Vehicle Parts Co., 3301 Colerain Ave., Cincinnati, O. "Hit 'em."

Everything is listed under the NOUN or principal word



Makes an End of Ignition Troubles

The present-day low grade gasoline, which causes so much trouble for the average ignition system, has an abundance of real power 'way down in its sluggish depths.

And it was left for Philbrin to get at and utilize this latent source of energy. The invention of the Philbrin contact maker and condenser has resulted in a new conception of ignition efficiency. The Philbrin spark is intensified, big-bodied, reaching—greatly increasing the horsepower and flexibility of a gasoline motor. Fuel mileage is increased. By the use of the High Frequency System (a feature of Philbrin Duplex Ignition) all starting difficulties are overcome and plug fouling is prevented.

You can install Philbrin Ignition in place of any system you are now using.

PHILBRIN CORPORATION
507 S. Broad St., Kennett Square, Pa.

THE JONES TACHOMETERS

FOR:

Automobile Starter and Test Bench Equipment.

Power Boats of All Descriptions.

Aeroplanes and Seaplanes.

Jones Tachometers have been adopted as standard equipment by many manufacturers of the above lines. There is a special type for every purpose.

Get our quotations on your particular requirements.

Consolidated Instrument Company of America

461 EIGHTH AVE., NEW YORK CITY
Detroit Cincinnati Chicago San Francisco

Filtered Gasoline to Vacuum Tank

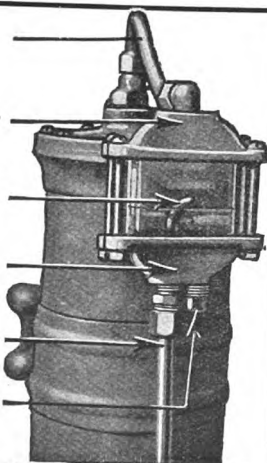
Filter Chamber

Gasoline Level When Vacuum Is Broken

Sediment Chamber

Pipe from Main Supply

Clean Out Plug



Dirty gasoline no longer exists in the car that is equipped with a "ZIM Gas-O-CLEAN." Thoroughly separates dirt and water from the gas before entering the vacuum tank, giving you an absolutely clean fuel.

Bound to be the big seller of the year. Attractive proposition for the distributor who has live wire salesmen covering the territory. Now advertising in trade papers and magazines to be followed up shortly by a national advertising and sales campaign. List price, \$5.50. Write for territory.

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New Haven, Conn.

Distributors and Jobbers of STANDARD MAKES of TIRES and TUBES

Surplus Stocks
BLEMISHED and SECONDS

Our prices are always
from 10% to 30%
below the market

Write for our latest edition of
"TIRE TIPS"
containing up-to-the-minute
information and discounts

AMBASSADOR TIRE CORPORATION
927 EIGHTH AVENUE NEW YORK CITY
"The House of Entire Satisfaction"

Please mention The Automobile Trade Directory

TACKS, Upholstery (Continued)

Brewer Tichener Corp., Cortland, N. Y.
 "Leathermet."
 Cleveland Tack Works, 1200 E. 55th St., Cleveland, O.
 Cobb & Drew, Plymouth, Mass.
 Crown—See Roberts Corp.
 Eagle—See Turner & Seymour Mfg. Co.
 Economy—See Neider Co.
 Genesee Tack Co., 29-57 Mt. Hope Ave., Rochester, N. Y.
 Hit 'em—See Auto-Vehicle Parts Co.
 Imperial—See Roberts Corp.
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 821.)
 Leatherlike—See Turner & Seymour Mfg. Co.
 Leathermet—See Brewer Tichener Corp.
 Leathermet—See Metal Stamping Co.
 Metal Stamping Co., Long Island City, N. Y. "Leathermet." (See page 168.)
 Milonite—See Morley Button Mfg. Co.
 Morley Button Mfg. Co., 120 Boylston St., Boston, Mass. "Milonite."
 Neider Co., F. A., Augusta, Ky. "Economy."
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn. "Anchor."
 Regal—See Roberts Corp.
 Ripley & Bartlett Co., Water St., Plymouth, Mass.
 Roberts Corp., G. G. 256 South Ave., Whitman, Mass. "Crown," "Regal," "Imperial."
 Salmond & Son, Sam, Hanover, Mass.
 Shelton Tack Co., Shelton, Conn.
 Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor.) (See page 81.)
 Tockwotton Co., 79 S. Main St., Providence, R. I.
 Tower Mfg. Co., Madison, Ind.
 Traut & Hine Mfg. Co., New Britain, Conn.
 Turner & Seymour Mfg. Co., Lawton St. & R. R., Torrington, Conn. "Eagle," "Leatherlike."
 Waterman Co., R. C., Water St., South Hanover, Mass.

TAIL LAMP BRACKETS—See Brackets, Side and Tail Lamp

TAIL LAMPS—See Lamps, Electric Side and Tail; also Lamps, Oil, Side and Tail

TALC, Tire

(Including Soapstone and Mica Tire Powders)

Arnstein, Eugene, 45 W. 26th St., Chicago, Ill. "Century."
 Automotive Supply Mfg. Co., 2005½ Main St., Dallas, Tex. "Cactus."
 Blue Ribbon—See International Metal Polish Co.
 Boyer Chemical Laboratory, 940 N. Clark St., Chicago, Ill.
 Cactus—See Automotive Supply Mfg. Co.
 Century—See Arnstein, Eugene.
 Cohutta Talc Co., Dalton, Ga.
 Doggett, Stanley, 11-13 Cliff St., New York, N. Y.
 Durkee-Atwood Co., 40 Wilder St., Minneapolis, Minn. "Rie-Nie."
 E-Fec-Tiv—See Permatite Mfg. Co.
 Hall-Thompson Co., Dept. A., Hartford, Conn. "Wonder Worker." (See page 655.)
 Imico—See International Mica Co.

International Metal Polish Co., Quill St. & Belt R. R., Indianapolis, Ind. "Blue Ribbon."

International Mica Co., 37th & Brandywine Sts., Philadelphia, Pa. "Imico."

Jewel—See Wadsworth-Howland Co.
 Liberty Chemical Works, Chicago, Ill. (See page 783.)

Martin-Senour Co., 2510 Quarry St., Chicago, Ill.

Mico—See Puritan Soap Co.
 Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.

Nevins Co., Samuel, 109 E. Second St., Philadelphia, Pa.

New England Minerals Co., 54 Devonshire St., Boston, Mass. "Yankee."

Northwestern Chemical Co., 785 State St., Marietta, O. "Norwesco." (See page 275.)

Norwesco—See Northwestern Chemical Co.
 Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."

Puritan Soap Co., 500 Exchange St., Rochester, N. Y. "Mico."

Richmond Mica Co., 301 E. Main St., Richmond, Va. "Rimco."

Rie-Nie—See Durkee-Atwood Co.
 Rimco—See Richmond Mica Co.

St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo.

U. S. Mica Mfg. Co., Forest Park, Ill.
 Wadsworth-Howland Co., 219 N. Carpenter St., Chicago, Ill. "Jewel."

Whittaker, W. H., 245 Front St., New York, N. Y.

Williams & Co., C. K., N. 13th St., Easton, Pa.

Wonder Worker—See Hall-Thompson Co.
 Yankee—See New England Minerals Co.

TANK CAPS FOR FORDS—See Caps, Gasoline Tank

TANK FILLER STRAINERS—See Strainers, Radiator and Tank Filler

TANK FILLING TUBES—See Tubes, Non-Explosive Tank Filling

TANK GAGES—See Gages, Gasoline Tank; also Gages, Vacuum Tank

TANK KEYS—See Keys, Acetylene

TANK TRUCKS—See Trucks, Acetylene and Oxygen Tank

TANKS, Acetylene

(For acetylene lights on car also including tanks for welding; see also Machines, Autogenous Welding)

Air Reduction Co., 120 Broadway, New York, N. Y. "Aircor."

Aircor—See Air Reduction Co.
 Commercial Acetylene Supply Co., 80 Broadway, New York, N. Y.

Hackney—See Pressed Steel Tank Co.
 Headlight Gas Co., 2136 N. Lawrence Ave., Wichita, Kans.

International Acetylene Co., Middletown, Conn. "Meteor."

Meteor—See International Acetylene Co.
 Pressed Steel Tank Co., 58th & Greenleaf Aves., Milwaukee, Wis. "Hackney."

Prest-O-Lite Co., 30 E. 42d St., New York, N. Y.

Everything is listed under the NOUN or principal word

G. P. & F. SERVICE
 "KNOWING HOW SINCE '81"

STAMPINGS

Oil Pans,
 Radiator Shells,
 Gear Covers,

Chain Covers,
 Cylinder Covers
 Spark Plug Covers, etc.

Gasoline Tanks



GASOLINE TANKS

G. P. & F. Gasoline Tanks are made accurately according to your specifications.

Send blue prints showing shape and size of your tanks for quotations, stating quantity required.

Our experience, facilities and organization enable us to quote you attractive prices.

Write us today



MAXIM SILENCERS

It is the perfected product of the nationally known H. P. Maxim.

By equipping your motor vehicles with Maxim Silencers, you are putting a strong sales argument in place of a nameless muffler.

You will find price interesting.

PRESSED STEEL PARTS STAMPINGS

GEUDER, DAESCHKE & FREY CO.
 1365-1700 ST. PAUL AVE., MILWAUKEE, WIS.



OVER 15 ACRES OF FLOOR SPACE

Please mention The Automobile Trade Directory

TANKS, Chemical Fire*(For installation on Motor Propelled Fire Apparatus)*

- Ajax Fire Engine Works, Bush Terminal Bldg. No. 10, Brooklyn, N. Y.
 Childs Co., O. J., 133 Liberty St., Utica, N. Y.
 Northern Fire Apparatus Co., 2422 University Ave., S. E., Minneapolis, Minn.
 Obenchain-Boyer Co. Logansport, Ind. (See page 125.)
 Pirsach & Sons Co., Peter, Kenosha, Wis. (See page 125.)
 Prospect Mfg. Co., Prospect, O.

TANKS, COMPRESSION—See Tanks, Vacuum and Compression Gasoline**TANKS, Emergency or Reserve***(For carrying a reserve supply of Gasoline or Oil; for Reserve Cocks—See Valves, Two Way Tank)*

- Bear—See Woolwine Metal Products Co.
 Boyle Mfg. Co., 21 Sutter St., Los Angeles, Cal. (See page 183.)
 Cox Brass Mfg. Co., N. Pearl & Van Woert Sts., Albany, N. Y. (See page 168.)
 Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass. (See page 185.)
 Fox Automotive Products Corp., 4700 N. 18th St., Philadelphia, Pa.
 Pandolfo Mfg. Co., St. Cloud, Minn.
 Swingspout Measure Co., 404 N. Los Angeles St., Los Angeles, Cal.
 Vogel & Bros., Wm., 37 S. Ninth St., Brooklyn, N. Y.
 Woolwine Metal Products Co., Eighth St. & Santa Fe Ave., Los Angeles, Cal. "Bear." (See page 845.)

TANKS, FIRE—See Tanks, Chemical Fire**TANKS, FUEL FEED—See Tanks, Vacuum and Compression Gasoline****TANKS, Fuel and Water**

- A. B. & B. Sheet Metal Works, 3300-02 Fond du Lac Ave., Milwaukee, Wis.
 Air-Tight Steel Tank Co., Mansion St., & B. & O. R. R., Pittsburgh, Pa. "Atsco."
 Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y.
 Atsco—See Air-Tight Steel Tank Co.
 Auto Radiator Mfg. Co., 1712 S. Michigan Ave., Chicago, Ill.
 Automotive Sheet Metal Co., Factory St. & Grand Trunk R. R., Kalamazoo, Mich. "Maco."
 Badger & Sons Co., E. B., 63-69 Pitts St., Boston, Mass.
 Blickman, S. Nelson Ave. & Mount St., Long Island City, N. Y.
 Briskin Mfg. Co., 215 S. Hoyne Ave., Chicago, Ill.
 Brummeler-Ruggles Metal Products Co., 1215 Ionia Ave., S. W., Grand Rapids, Mich.
 Brummeler's Sons Co., Wm., 413 Ionia Ave., S. W., Grand Rapids, Mich. "Brusco."
 Brusco—See Brummeler's Sons Co.
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Bush Mfg. Co., Hartford, Conn. (See page 683.)
 Case Mfg. Co., 214-16 N. Mechanic St., Jackson, Mich.
 Central Service Corp., 1007 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
 Champlon Milk Cooler Co., 52-60 Owego St., Cortland, N. Y.
 Chicago Mfg. Co., 1458-64 Michigan Ave., Chicago, Ill.
 Clayton & Lambert Mfg. Co., 10507 Knoll Ave., Detroit, Mich. (See page 471.)
 Clayton's Sons, Frank B., 1227-33 N. 11th St., Philadelphia, Pa.
 Columbus Auto Brass Co., Columbus, O. (See page 381.)
 Cornwall Mfg. Co., Cleveland, O. (See page 845.)
 Davis-Watkins Mfg. Co., 122 Morgan St., Jersey City, N. J.
 Derby Coppersmithing & Sheet Metal Contracting Co., First & Caroline Sts., Derby, Conn.
 Detroit Auto Specialty Corp., 6209 Greenwood Ave., Detroit, Mich.
 Elsener Mfg. Co., C. C., 15423 Center St., Harvey, Ill.
 Eslien Sheet Metal Works, 999-1001 30th St., Milwaukee, Wis.
 Evans Mfg. Co., First Ave. & 21st St., Moline, Ill.
 Federal Pressed Steel Co., 52 Keefe Ave., Milwaukee, Wis.
 Fosteria Pressed Steel Co., Fosteria, O. (See page 377.)
 Freeland Sons Co., B. F., Sturgis, Mich.
 Geuder, Paeschke & Frey Co., 1365-1700 St. Paul Ave., Milwaukee, Wis. (See page 843.)
 Hackney—See Pressed Steel Tank Co.
 Janney-Steinmetz & Co., Philadelphia, Pa. "Jasco." (See page 845.)
 Jasco—See Janney-Steinmetz & Co.
 Johnson's Automobile Sheet Metal Works, W. N., 620-23 South J St., Richmond, Ind.
 Kells Mfg. Co., W. J., 521-25 W. 45th St., New York, N. Y.
 Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.
 Kleber-Sherman Mfg. Co., 2807 S. Michigan Ave., Chicago, Ill.
 Koven & Bro., L. O., 154 Ogden St., Jersey City, N. J.
 Lawco—See Lawson Co.
 Lawson Co., F. H., Dept. D, Cincinnati, O. "Lawco." (See page 377.)
 Maco—See Automotive Sheet Metal Co.
 Made-O-Metal—See Pandolfo Mfg. Co.
 Mertz Mfg. Co., John, Water & Decatur Sts., Sandusky, O.
 Metal Auto Parts Co., Chase & Henry Sts., Indianapolis, Ind.
 Michigan Crown Fender Co., N. Huron St., Ypsilanti, Mich.
 Michigan Stamping Co., 11631 Mack Ave., Detroit, Mich.
 Mitchell & Son, G. F., 6501 Cedar Ave., Cleveland, O.
 Morrison & Sons, F., 1330 W. 11th St., Cleveland, O.
 Motors Metal Mfg. Co., 5936 Milford Ave., Detroit, Mich.
 Murray Auto Parts Mfg. Co., Atlanta, Ga.
 Murray Mfg. Co., J. W., 571 Clay Ave., Detroit, Mich.
 National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y.
 Pandolfo Mfg. Co., St. Cloud, Minn. "Made-O-Metal."
 Paragon Auto-Parts Mfg. Co., 506 W. 53d St., New York, N. Y.
 Perflex Radiator Co., Racine, Wis.
 Phillips & Co., H., 904-10 Evans St., Cincinnati, O.
 Pressed Steel Tank Co., 53th & Greenfield Aves., Milwaukee, Wis. "Hackney."

Everything is listed under the NOUN or principal word

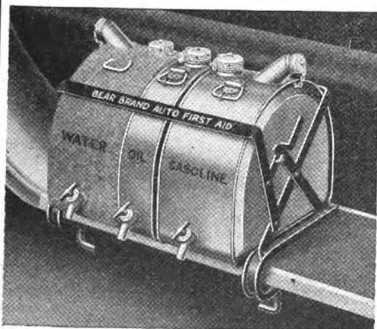


**THE ONE SURE WAY
OF SAFEGUARDING
YOUR GASOLINE**

Made of the finest, seamless, drawn steel, tinned and tested—it cannot leak no matter how rough the service.

The "Jasco" tank is service-proved and time-demonstrated.

JANNEY, STEINMETZ & COMPANY
Main Office, Philadelphia
New York Office, Hudson Terminal Building



**"BEAR" BRAND
CANTEENS**

For carrying an extra supply of gas,
oil and water

Made in five different combinations with or without faucets. Holder is made entirely of steel, which is japanned, and fastens to the running board by two channel steel clamps. Dealers will find these combinations very ready sellers and in increasing demand.

WOOLWINE METAL PRODUCTS CO.
8th St. and Santa Fe Ave., Los Angeles, Calif.

FUEL TANKS

for

**Automobiles, Trucks,
Tractors, Aeroplanes,
Motorcycles and
Motorboats**

**LIGHT METAL
STAMPINGS**

**Shearing, Punching
and Forming**

**SHEET METAL
SPECIALTIES**

of every character
**Metal Boxes, Pans,
Trays, Guards, etc.**

**THE CORNWALL
MANUFACTURING
COMPANY**

CLEVELAND

OHIO

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TANKS, Fuel & Water (Continued)

Progressive Sheet Metal Co., 1976-84 Central Ave., Cincinnati, O.
 Pullman Ventilator & Mfg. Co., West York Ave. & W. M. R. R., York, Pa.
 S. & J.—See Shotwell-Johnson.
 Scaife & Sons, Wm. B., First National Bank Bldg., Pittsburgh, Pa.
 Sexton Can Co., 123 Broad St., Boston, Mass.
 Shotwell-Johnson, 712-22 Ontario Ave. N., Minneapolis, Minn. "S-J."
 Standard Steel Works, 1740 Tracy Ave., Kansas City, Mo. (See page 125.)
 Todd Mfg. Co., 12-14 12th St., Minneapolis, Minn.
 Trageser Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 849.)
 Welded Steel Barrel Corp., Hart & Charlevoix Aves., Detroit, Mich.
 Wemsco—See Western Metal Specialty Co.
 Western Drop Forge Co., Marion, Ind.
 Western Metal Specialty Co., 1919 St. Paul Ave., Milwaukee, Wis. "Wemsco."
 Western Radiator & Fender Mfg. Co., 1430 Bush St., San Francisco, Cal.
 Wilson & Bowen, 1318 S. Main St., Los Angeles, Cal.
 Wright Cooler & Hood Mfg. Co., 4868-70 N. Clark St., Chicago, Ill.
 Xardell Corp., W. Pleasant St., Utica, N. Y.
 York Corrugating Co., York, Pa. (See page 377.)

TANKS, GASOLINE AND WATER—See Tanks, Fuel; also Tanks, Emergency and Reserve; also Tanks and Systems, Gasoline

TANKS, Inner Tube Testing

(Specially formed tanks for locating leaks in tubes)

Boyle Mfg. Co., 21 Sutter St., Los Angeles, Cal. (See page 183.)
 Dover Stamping & Mfg. Co., 385 Putnam Ave., Cambridge, Mass.
 Haco—See Heller-Aller Co.
 Heller-Aller Co., Napoleon, O. "Haco."
 P. S. M. Co., 3116-36 Snelling Ave., Minneapolis, Minn. (See page 931.)

TANKS and SYSTEMS, Gasoline Storage

Air-Tight Steel Tank Co., Mansion St. & B. & O. R. R., Pittsburgh, Pa. "Atsco."
 Allen Pressure System Co., 24 W. 61st St., New York, N. Y. "Apsco."
 American Oil Pump & Tank Co., Findlay & Dalton Sts., Cincinnati, O.
 Anderson Visible Pump & Tank Co., Savannah, Ga.
 Apsco—See Allen Pressure System Co.
 Atsco—See Air-Tight Steel Tank Co.
 Avon Specialties Mfg. Co., 44-46 Market Pl., Baltimore, Md. "U-C-What-U-Get."
 Barnes Mfg. Co., N. Main St., Mansfield, O.
 Beman Automatic Oil Can Co., Meadville, Pa.
 Big Gusher—See Western Oil Pump & Tank Co.
 Biggs Boiler Works Co., 1007 Bank St., Akron, Ohio.
 Bowser & Co., S. F., 1314 Creighton Ave., Fort Wayne, Ind.
 Boyle-Dayton Co., 51st St. & Santa Fe Ave., Los Angeles, Cal.

Brady—See Visible Measure Gasoline Dispenser Co.

Brown Sheet Iron & Steel Co., 964 Berry Ave., St. Paul, Minn.

Butler Mfg. Co., 1324 Grand Ave., Kansas City, Mo.

Catron Mfg. Co., Bonham, Tex.

Chicago Steel Tank Co., 1313 S. 55th St., Cicero, Ill.

Clear Vision Pump Co., 822 E. Harry St., Wichita, Kans.

Climax—See Keystone Boiler & Foundry Co.

Columbian Steel Tank Co., 1519-1625 W. 12th St., Kansas City, Mo. (See page 849.)

Dayton Pump & Mfg. Co., Webster St., Dayton, O. "Rapidayton."

Delphos Mfg. Co., 100-24 S. Pierce St., Delphos, O.

Eastern Oil Tank Co., 146 Fletcher St., Lowell, Mass.

Economy Gas Machine Co., Rochester, N. Y. Equipment Supply Co., York, Pa. "Standard."

Eslien Sheet Metal Works, 999-1001 30th St., Milwaukee, Wis.

Farr Hydraulic Systems, 11 Broadway, New York, N. Y.

Fleckenstein Visible Gasometer Co., 328 Bond Ave., Grand Rapids, Mich.

Freeland Sons Co., B. F., Sturgis, Mich. "Pioneer."

Freeland Steel Tank Co., Second & Adams Sts., Portage, Wis.

Geyser—See Visible Gasoline Dispenser Co.

Gilbert & Barker Mfg. Co., Springfield, Mass. (See page 849.)

Graver Corp., 4809 Todd Ave., East Chicago, Ind.

Griscom—Russell Co., Massillon, O. Grootken Pump Co., 171 Middle Ave., Aurora, Ill. "Jumbo."

Guarantee Liquid Measure Co., Rochester, Pa. (See page 686.)

Haco—See Heller-Aller Co.

Hall Mfg. Co., Cedar Rapids, Iowa.

Harry Steel Co., O. K., 2332-35 Papin St., St. Louis, Mo.

Hayes Equipment Co., 701 E. Gilbert St., Wichita, Kan.

Hell Co., 1136-40 Montana Ave., Milwaukee, Wis. "Quality." (See page 459.)

Heller-Aller Co., Napoleon, O. "Haco."

Hull—See Southern Foundry & Mfg. Co.

Hummel Mfg. Co., 3014 La Salle St., St. Louis, Mo. (See page 143.)

Ideal—See Kupferle Bros. Mfg. Co.

Ideco, Inc., 311 N. Fifth St., Springfield, Ill.

Imperial—See Western Oil Pump & Tank Co.

Inglis Mfg. Co., 283 Fifth Ave., Milwaukee, Wis.

Jackson Metal Products Co., 601-15 Liberty St., Jackson, Mich.

Julian Pump Co., Jamestown, N. Y. "Square Deal."

Jumbo—See Grootken Pump Co.

Kewanee Private Utilities Co., Franklin St., Kewanee, Ill.

Keystone Boiler & Foundry Co., Landisville, Pa. "Climax."

Kirk & Blum, 2846 Spring Grove Ave., Cincinnati, O.

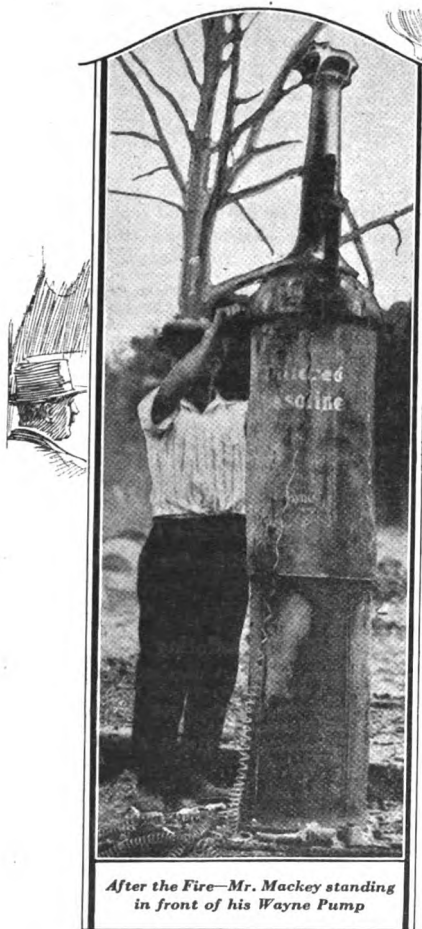
Koven & Bro., L. O., 154 Ogden St., Jersey City, N. J.

Kupferle Bros. Mfg. Co., 600-04 N. Second St., St. Louis, Mo. "Ideal."

Leetonia Boiler Co., Leetonia, O.

Little Gem—See Western Oil Pump & Tank Co.

Everything is listed under the NOUN or principal word



After the Fire—Mr. Mackey standing
in front of his Wayne Pump



All That Remained —A Wayne Pump

AT one o'clock in the morning, July 7th, the general store owned by William Mackey at Echo, Indiana, caught on fire and burned to the ground.

Not a thing was saved except—his Wayne Pump. During the fire the pump was wrapped in flames and the intense heat melted the glass and warped the lock. However, the air-tight underground storage tank kept the gasoline cool and at no time was there danger of explosion. Afterwards the mechanism of the pump was found to be in perfect condition.

Wayne Honest Measure Gasoline Pumps are fire-proof. But that is only one of the many features.

The others are:

Overhead drain which automatically gives the motorist all the gasoline in the hose.

Wayne Dial which registers each gallon after delivery—not before.

Million-gallon gear-driven meter which accurately records all gasoline dispensed.

Graduated scale which shows fractional parts of a gallon.

Positive filter and four screens which assure pure gasoline.

Piston-pump measure which assures accuracy.

You will find Bulletin 276AD interesting. It is free.

Wayne Oil Tank & Pump Co.

703 Canal Street, Ft. Wayne, Ind.

San Francisco Office: 631-633 Howard Street

A national organization with offices in thirty-four American cities. Canadian Tank and Pump Co., Limited, Toronto, Ont., Canada. Representatives everywhere. Repair stocks and expert service at your command.

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Wayne
TRADE MARK

OIL CONSERVATION SYSTEMS

Gasoline and Oil
Storage Systems

Heavy Metal
Storage Tanks

Oil Filtration
Systems

Oil Burning
Systems

Furnaces for Metal Melting
Forging and Heat Treating

Please mention The Automobile Trade Directory

TANKS and SYSTEMS, Gasoline Storage (Continued)

Little Sampson—See Western Oil Pump & Tank Co.
 Martini & Huneke Co., of America, 1201 Hudson St., Hoboken, N. J.
 Maxwell Co., Earl C., 93-123 13th St., Brooklyn, N. Y.
 Milwaukee Tank Works, Fratney & Becker Sts., Milwaukee, Wis.
 Mogul—See Western Oil Pump & Tank Co.
 Monarch Radiator & Fender Works, 632-38 Ellis St., San Francisco, Cal.
 Morrison Bros., 24th & Elm Sts., Dubuque, Ia.
 Morrison Steel Products Co., 26-28 E. North St., Buffalo, N. Y.
 Morrison Bros., Elm St., Dubuque, Ia.
 National Enameling & Stamping Co., 413 Fifth Ave., New York, N. Y.
 National Store Specialty Co., Bareville, Pa. "Pennsylvania."
 Nebraska & Iowa Steel Tank Co., 1300 Willis Ave., Omaha, Neb. "Nelo."
 Nell & Co., Wm., 617 Division St., Chicago, Ill.
 Nelo—See Nebraska & Iowa Steel Tank Co.
 Nicholson Co., Fancourt St. & Duquesne Way, Pittsburgh, Pa.
 Niles Steel Tank Co., Niles, Mich.
 Norwich Wire Works, Lackawanna Ave., Norwich, N. Y.
 Osborne-McHenry Co., 1300 N. Main St., Los Angeles, Cal.
 Peerless Equipment Co., 6022 S. State St., Chicago, Ill.
 Pennsylvania—See National Store Specialty Co.
 Perfection—See Western Oil Pump & Tank Co.
 Pioneer—See Freeland Sons Co.
 Phillips & Co., H., 904-10 Evans St., Cincinnati, O.
 Quality—See Hell Co.
 Rapidayton—See Dayton Pump & Mfg. Co.
 Raymond Garage Equipment Co., Center St., Adrian, Mich.
 Scaife & Sons, Wm. B., First National Bank Bldg., Pittsburgh, Pa.
 Sheet Metal Products Co., Duluth, Minn.
 Shotwell Pump & Tank Co., 22 Parkman St., Boston, Mass.
 Southern Foundry & Mfg. Co. (Seven Hills), Owensboro, Ky. "Hull."
 Springfield Mfg. Co., 900 E. Monroe St., Springfield, Ill.
 Square Deal—See Julian Pump Co.
 Standard—See Equipment Supply Co.
 Stover Steel Tank & Mfg. Co., Hancock Ave., Freeport, Ill.
 Thrill Gas Machine Lighting Co., 108 Park Ave., New York, N. Y.
 Tokheim Co., Cedar Rapids, Ia. "Triune."
 Trager Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 849.)
 Triune—See Tokheim Co.
 U-C-What-U-Get—See Avon Specialties Mfg. Co.
 Universal Iron & Supply Co., St. Louis, Mo.
 Visible Gasoline Dispenser Co., House Bldg., Pittsburgh, Pa. "Geyser."
 Visible Measure Gasoline Dispenser Co., 700-800 W. Breckenridge St., Louisville, Ky. "Brady."
 Visible Pump Co., New Haven, Ind.
 Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 847.)
 Welded Steel Barrel Corp., Hart & Charlevoix Aves., Detroit, Mich.
 Western Oil Pump & Tank Co., 2437 Kosciusko St., St. Louis, Mo. "Little Sampson," "Imperial," "Perfection," "Little Gem," "Big Gusher," "Mogul."

TANKS and SYSTEMS, Oil

(For storing and handling oil in filling stations)
 Bowser & Co., S. F., 1314 Creighton Ave., Fort Wayne, Ind.
 Gilbert & Barker Mfg. Co., Springfield, Mass. (See page 849.)
 Wayne Oil Tank & Pump Co., 703 Canal St., Fort Wayne, Ind. (See page 847.)

TANKS, Oxygen

(For use in Autogenous Welding or Carbon Removing)
 Air Reduction Co., 120 Broadway, New York, N. Y. "Airco."
 Airco—See Air Reduction Sales Co.
 Burdett Oxygen Co., 1401-05 Jackson Blvd., Chicago, Ill.
 Electroxx Co., ft. Bridge, Peoria, Ill.
 Linde Air Products Co., 30 E. 42d St., New York, N. Y.
 Rego—See Universal Oxygen Co.
 Superior Oxygen Co. of Mo., 115 Plum St., St. Louis, Mo.
 Tariffville Oxygen & Chemical Co., Tariffville, Conn.
 Universal Oxygen Co., 14th & Illinois Sts., Sheboygan, Wis. "Rego."

TANKS, RESERVE—See Tanks, Emergency

TANKS, STORAGE—See Tanks, Gasoline Storage

TANKS, Tire Inflating

(Steel tanks filled with compressed air or carbonic acid gas for carrying on car)
 Cleveland Faucet Co., 708 Frankfort Ave., N. W., Cleveland, O.
 Liquid Carbonic Co., 3100 S. Kedzie Ave., Chicago, Ill.

TANKS, Vacuum and Compression Gasoline

(For Magneto Pumps—See Systems, Magneto Pump)
 Carter Carburetor Co., 2338-40 N. Spring Ave., St. Louis, Mo.
 Impulse Tank Co., 2322 N. Spring Ave., St. Louis, Mo.
 Sparks-Withington Co., Jackson, Mich. "Sparkton."
 Spanton—See Sparks-Withington Co.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)
 Vapor-Valve Co., 2322 N. Spring Ave., St. Louis, Mo. "Vaporspray."
 Vaporspray—See Vapor-Valve Co.

TANKS, WATER—See Tanks, Fuel

TAP EXTRACTORS—See Extractors, Broken Tap

TAPE, Insulating and Tire

Anchor Packing Co., 72 Murray St., New York, N. Y. "Apex."
 Anchor Webbing Co., 300 Brook St., Pawtucket, R. I. "Awebco."
 Apex—See Anchor Packing Co.

Everything is listed under the NOUN or principal word

COLUMBIAN

*Partition Mounted
3 Point Supported*

TRUCK TANKS

Exclusive and Extraordinary Features—Partition Mounted, Lowest Mounting, Less Deadweight, Three Point Supported, No Twisting Strains, Less Upkeep Expense, Jointless Pipe Lines with Funnel Outlets, Side Carrying Racks, Removable and Adjustable Welded-on Bucket Boxes, Tank, Mounting, Pipe Lines and Bucket Box Welded into a Monometallic Unit, Correct Distribution of Load on Rear Axle, The Triumphant Climax to Truck Tank Construction.

COLUMBIAN Monometallic DUMP BEDS

Longitudinal sills formed from side and bottom members. All members electrically welded into monometallic unit. No rivets in entire assembly. Stronger, more rigid, longer service. Five models. Tail gate hinged top and bottom—double acting.

COLUMBIAN Lightning Hoist

A simple device built upon sound engineering principles, giving power that enables a man to dump a five-ton load with ease and without power expense. Narrow and compact in construction. Mounts in 11-inch space.

THE BIG 3

of the
Truck Equipment Field

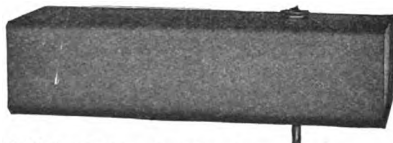
A letter, a telegram or a ring on the telephone will bring full data and way down prices on any one or all three.

COLUMBIAN STEEL TANK CO.

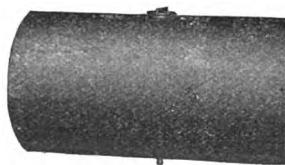
Tanks for the World Established in 1894
1519-1625 West 12th Street Kansas City, Mo.

TRAGESER

Gasoline Tanks Outlast the Truck



Welded and tinned inside and out by hot process.
Made from No. 16 gauge steel.
Brass "Filler" cap.



Dished Head
Pressure
Tank.

All are individually tested by air pressure underwater. Send blueprints for special tanks.

John Trageser Steam Copper Works
447-457 W. 26th STREET NEW YORK



Better your service

through GILBERT & BARKER

Gasoline Curb Pumps

Your customers are in just as much of a hurry pleasure bent as on business trips.

Quick service satisfies them.

G. & B. equipment assures that safe, speedy, accurate delivery coupled with a dependability which gives complete satisfaction to motorist and owner.

Write for Bulletin No. 76

GILBERT & BARKER MFG. CO.
SPRINGFIELD, MASS.

Please mention The Automobile Trade Directory

TAPE, Insulating and Tire (Cont'd)

Awebco—See Anchor Webbing Co.
 Bestyet—See St. Louis Rubber Cement Co.
 Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass. "Evergrip."
 Clifton Mfg. Co., 65 Brookside Ave. (Jamaica Plain), Boston, Mass.
 Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (New Jersey Distributors for "J-M." Tape.) (See page 495.)
 Evergrip—See Boston Woven Hose & Rubber Co.
 Gilmer Co., L. H., Philadelphia, Pa. (See pages 116 and 117.)
 Goodrich Co., B. F., S. Main St., Akron, O.
 Hudson Narrow Fabric Co., Cherry St., Hudson, Mass.
 Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.
 J-M—See Johns-Manville Co.
 Johns-Manville Co., H. W., Madison Ave. & 41st St., New York, N. Y. "J-M."
 Kerite Insulated Wire & Cable Co., New York, N. Y. (See page 957.)
 Manson—See Okonite Co.
 Multibestos Co., Walpole, Mass. "Stanwal." (See page 527.)
 National Rubber & Specialties Co., 4433-39 Chickering Ave., Cincinnati, O. "Red Cross."
 New York Insulated Wire Co., 114 Liberty St., New York, N. Y.
 Okonite Co., Passaic, N. J. "Manson."
 Red Cross—See National Rubber & Specialties Co.
 Rusco—See Russell Mfg. Co.
 Russell Mfg. Co., Middletown, Conn. "Rusco." (See page 530.)
 St. Louis Rubber Cement Co., 3046 Lambdin Ave., St. Louis, Mo. "Bestyet."
 Smith Belting Co., Manning J., 39 E. Ashmead St. (Germantown), Philadelphia, Pa. (See page 115.)
 Stanwal—See Multibestos Co.
 United States Tire Co., 1790 Broadway, New York, N. Y. (See page 863.)
 Van Cleef Bros., 7709-11 Woodlawn Ave., Chicago, Ill.
 Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
 Wood Mfg. Co., Frank, 45 E. 17th St., New York, N. Y.

TAPE, TIRE—See Tape, Insulating

TAPER PINS—See Pins, Taper

TAPER SHIMS, REAR AXLE FOR FORDS
 —See Shims, Rear Axle Taper

TAPERING MACHINES—See Machines, Spring Leaf Tapering

TAPPET SILENCERS, OVERHEAD VALVE
 —See Silencers, Overhead Valve.

TAPPETS, VALVE—See Rods, Adjustable Valve Lift

TAPPING DRILLS—See Drills, Upright

TAPPING MACHINES—See Machines, Tapping

TAPS, Dies and Screw Plates

Acme—See American Tap & Die Co.
 Adamantine—See American Tap & Die Co.
 Alvord Reamer & Tool Co., Millersburg, Pa. (See page 701.)

American Tap & Die Co., Greenfield, Mass. "Adamantine," "Acme," "Eagle." (See page 853.)

Bay State Tap & Die Co., 75 Chauncy St., Mansfield, Mass.

Besly & Co., Charles H., 118-24 N. Clinton St., Chicago, Ill. "Helmet."

Blanche Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blanche Twist Drill & Tool Co., Taunton, Mass.)

Blanche Twist Drill & Tool Co.—See Blanche Co.

Brubaker & Bros., W. L., 50 Church St., New York, N. Y.

Butterfield & Co. (Division of Union Twist Drill Co.), Derby Line, Vt. "Derby."

Card Mfg. Co., S. W., Mansfield, Mass. "Paragon."

Carpenter Tap & Die Co., J. M., 17 Newell Ave., Pawtucket, R. I.

Champion Blore & Forge Co., Harrison Ave. & Charlotte St., Lancaster, Pa.

Conant & Donelson Co., Conway, Mass. "Reliable."

Derby—See Butterfield & Co.
 Detroit Twist Drill Co., Detroit, Mich. (See page 351.)

Eagle—See American Tap & Die Co.

GTD—See Greenfield Tap & Die Corp.

Green River—See Greenfield Tap & Die Corp.

Greenfield Tap & Die Corp., Greenfield, Mass. "Little Giant," "Lightning," "Green River," "Hercules," "G T D." (See page 855.)

Hardinge Bros., 1770 Berteau Ave., Chicago, Ill.

Helmet—See Besly & Co.

Hercules—See Greenfield Tap & Die Corp.

Keystone Reamer & Tool Co., Millersburg, Pa. (See page 693.)

Lightning—See Greenfield Tap & Die Corp.

Little Giant—See Greenfield Tap & Die Corp.

Manufacturers Equipment Co., 169 N. Jefferson St., Chicago, Ill.

Morse Twist Drill & Machine Co., 163 Pleasant St., New Bedford, Mass.

Oster Mfg. Co., 2102 E. 61st St., Cleveland, O.

Paragon—See Card Mfg. Co.

Polk & Son Co., A. J., Millersburg, Pa.

Pratt & Whitney Co., 111 Broadway, New York, N. Y.

Reed & Prince Mfg. Co., Duncan Ave., Worcester, Mass.

Reliable—See Conant & Donelson.

Remington Tool & Machine Co., 97 Haverhill St., Boston, Mass.

Russell Mfg. Co., Carpenters Lane, Greenfield, Mass.

Standard Tool Co., 6900-14 Central Ave., Cleveland, O.

Thistle—See Winter Bros. Co.

Toledo Tap & Die Co., Clinton St. & Oakwood Ave., Toledo, O.

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Winter Bros. Co., Kendrick St., Wrentham, Mass. "Thistle."

Everything is listed under the NOUN or principal word

TAR REMOVING COMPOUNDS—See
Compounds, Tar Removing**TAXIMETERS**

American Taximeter Co., 16 W. 61st St., New York, N. Y. "Popp," "Jones."
 Jones—See American Taximeter Co.
 Ohmer Fair Register Co., Bolender & Big Four R. R., Dayton, O.
 Pittsburgh Taximeter Co., Manufacturers Bldg., Pittsburgh, Pa.
 Popp—See American Taximeter Co.
 Stoll Mfg. Co., 33rd & Walnut Sts., Denver, Colo.

TEE STEEL—See Steel, Angle**TEES, PIPE—See Fittings, Pipe****TELEPHONES, Limousine**

(For Speaking Tubes—See Tubes, Speaking; For Annunciators—See Annunciators)

American Electric Co., 6401 S. State St., Chicago, Ill. "Carphone."
 Carphone—See American Electric Co.
 Chau-Phone—See Western Electric Co.
 Dictograph Products Corp., 230 W. 42d St., New York, N. Y.
 Gohring—See Taylor Co.
 Klaxon, Detroit, Mich. "Stentor."
 Motorphone—See Stanley & Patterson.
 O'Brien Mfg. Co., Joseph E., 47-49 W. 63rd St., New York, N. Y.
 Stanley & Patterson, West & Hubert Sts., New York, N. Y. "Motorphone."
 Stentor—See Klaxon.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y. "Gohring."
 Western Electric Co., 110 Williams St., New York, N. Y. "Chau-Phone."

TEMPERATURE CONTROLLERS FOR FORDS—See Covers, Automatic Radiator**TEMPERATURE INDICATING METERS—**
See Meters, Water Temperature; also
Meters, Oil Temperature Indicating**TEMPERING FURNACES—See Furnaces,**
Annealing**TEMPERING, METAL—See Treating, Heat****TENDERS, Tractor**

(Wheeled truck equipped with fuel, oil and water tanks)
 Steinke Bros. Mfg. Co., Schradski Bldg., Peoria, Ill.

TENONING MACHINES—See Machines,
Wood Mortising**TENTS, Touring**

Anton & Ackerman Co., 132-34 Kansas Ave., Topeka, Kans.
 Arapahoe—See Brooks Tent & Awning Co.
 Auto Bed Camp Mfg. Co., 2207 Pennsylvania St., Kansas City, Mo.
 Brooks Tent & Awning Co., 1655 Arapahoe St., Denver, Colo. "Arapahoe."
 Burch Mfg. Co., F. J. First St. & Santa Fe Ave., Pueblo, Colo. "Pullman."

Carnie-Goudie Mfg. Co., 22d & Grand Sts., Kansas City, Mo.
 Channon Co., H., 159 N. Market St., Chicago, Ill.
 Cleveland-Akron Bag Co., Cleveland, O. (See page 91.)
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Compac Tent Co., 425 W. Tenth St., Indianapolis, Ind.
 Cruiser Motor Car Co., Madison, Wis.
 Demoln—See Des Moines Tent & Awning Co.
 Des Moines Tent & Awning Co., 913-15 Walnut St., Des Moines, Ia. "Demoln."
 Enterprise Bed Co., Hammond, Ind.
 Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.
 Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.
 Goss Co., J. C., 36 Woodbridge St., E., Detroit, Mich.
 Metropolitan Air Goods Co., Marble St., Athol, Mass. "Whall's."
 Phoenix Tent & Army Co., First & Monroe Sts., Phoenix, Ariz.
 Plummer Mfg. Co., W. A., San Francisco, Cal.
 Pullman—See Burch Mfg. Co.
 Red Seal—See Schaefer Tent & Awning Co.
 Schaefer Tent & Awning Co., 1421-23 Larimer St., Denver, Colo. "Red Seal."
 Stoll Mfg. Co., 3250 Larimer St., Denver, Colo.
 Strong Bungalow Co., 226 Edgewood St., Hartford, Conn.
 Tentobed Co., 3300 W. Jackson Blvd., Chicago, Ill.
 Whall's—See Metropolitan Air Goods Co.
 Wensel Tent & Duck Co., H., 1035 Paul St., St. Louis, Mo.
 Way Sagless Spring Co., E. Hennepin St. & Fifth Ave., S. E., Minneapolis, Minn.

TERMINAL CLEANING TOOLS—See
Tools, Terminal Cleaning**TERMINAL FORMING TOOLS—See Tools,**
Wire Terminal Forming**TERMINAL PAINTS—See Paints, Storage**
Battery Terminal**TERMINAL TONGS—See Tools, Storage**
Battery Repair**TERMINALS, STORAGE BATTERY—See**
Connectors, Storage Battery**TERMINALS, STORAGE BATTERY RE-**
PAIR—See Parts, Storage Battery Repair**TERMINALS, Timer for Fords**

Lockwood Products Co., Metropolitan Bank Bldg., Minneapolis, Minn. (See page 853.)
 Pedersen Lubricator Co., 636 First Ave., New York, N. Y. "United."
 United—See Pedersen Lubricator Co.

TERMINALS, Wire

(See also Connectors, Battery)

Acorn Motor Equipment Corp., 44 Penn St., Brooklyn, N. Y. "Hadco." (See page 121.)
 B. A. T. Terminal Co., 105 Vanderveer St., Brooklyn, N. Y. "Bayleys." (See page 853.)

Everything is listed under the NOUN or principal word

TERMINALS, Wire (Continued)

Barcy-Nicholson Co., 2801-19 W. Fort St., Detroit, Mich.

Bayleys—See B. A. T. Terminal Co.

Becco—See Michigan Motor Specialties Co.

Blauvelt Co., James P., Cedar St., Nyack, N. Y.

Blublaze Motor Specialties Corp., 49-51 W. 60th, New York. "United." (See page 859.)

Braeznell, J. H., 26 Court St., Brooklyn, N. Y.

Champion Spark Plug Co., 804 Avondale Ave., Toledo, O. "J-D." (See page 651.)

Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)

Eureka—See Morse, Frank W.

Fahnestock Electric Co., East Ave. & Eighth St., Long Island City, N. Y.

Fitzgerald Mfg. Co., Torrington, Conn. (See page 411.)

Grip-Tite—See Standard Motor Products Mfg. Corp.

Hadco—See Acorn Motor Equipment Corp.

Herz, 182 Locust Ave., New York, N. Y. (See page 682.)

Hi-Po Waterproof Battery Corp., South Norwalk, Conn.

Ideal Clamp Mfg. Co., 198-202 Bradford St., Brooklyn, N. Y. (See page 247.)

J-D—See Champion Spark Plug Co.

K-E-M Co., 474 Sterling Pl., Brooklyn, N. Y.

Lemke Electric Co., 505-13 Cedar St., Milwaukee, Wis.

Lombardi Motor Car Co., 67-71 Minerva St., Derby, Conn.

Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."

Morse, Frank W., 289 Congress St., Boston, Mass. "Eureka." (See page 221.)

Patton-MacGuyer Co., 31 Mathewson St., Providence, R. I.

Pines Mfg. Co., Dept. E, 408 N. Sacramento Blvd., Chicago, Ill. (See page 686.)

Rajah Auto Supply Co., Locust Ave. & Nelson St., Bloomfield, N. J.

Shain, Chas. D., Brooklyn, N. Y.

Sherman Mfg. Co., H. B., Battle Creek, Mich. (See page 853.)

Standard Motor Products Mfg. Corp., 908 W. Chicago Ave., Chicago, Ill. "Grip-Tite."

United—See Blublaze Motor Specialties Corp.

Wiederholt Terminals, St. Louis, Mo.

TEST CLIPS—See Clips, Electrical Test

TEST COCKS FOR FORDS—See Gages, Oil

TEST STANDS, ELECTRIC—See Stands, Electric Test

TESTERS, ACID—See Hydrometers

TESTERS, BATTERY—See Gages, Battery; also Hydrometers

TESTERS, Coil
(*Board for shop use for testing and adjusting coils*)

Ballman-Whitten Mfg. Co., 4015 Laclede Ave., St. Louis, Mo.

Durham Co., P. J., 244 W. 49th St., New York, N. Y.

F-B Electric & Mfg. Co.—See Fairbanks Co.

Fairbanks Co., New York, N. Y. (Sole Distributors for F-B Electric & Mfg. Co., Detroit, Mich.) (See pages 491 to 494.)

TESTERS, ELECTRICAL—See Instruments, Electrical

TESTERS, GASOLINE—See Hydrometers**TESTERS, GEAR—See Instruments, Gear Testing****TESTERS, METAL—See Instruments, Metal Testing****TESTERS, PLUG—See Testers, Spark Plug****TESTERS, RUBBER—See Instruments, Rubber Testing****TESTERS, Spark Plug**

Air Reduction Sales Co.—See Cassidy Co.

Aircro—See Cassidy Co.

Best—See Perkins Spark Plug Tester Corp.

Buckeye—See Central Brass & Fixture Co.

Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for Air Reduction Sales Co., New York, N. Y.) "Aircro."

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Magic Mfg. Co., Gary, Ind.

Moeller, J. F., 10822 S. Western Ave., Chicago, Ill. "Momaco."

Momaco—See Moeller, J. F.

Morgan, C. W., 1336 Michigan Ave., Chicago, Ill.

Peck, C. H., 2154 N. Carlisle St., Philadelphia, Pa.

Perkins Spark Plug Tester Corp., 350 Broadway, New York, N. Y. "Best."

Radamax—See Smith & Sons.

Rosco—See Rosen & Co.

Rosen & Co., A. W., 610-14 Broadway, New York, N. Y. "Rosco."

(See page 459.)

Smith & Sons, S., 154 Nassau St., New York, N. Y. (Importers.) "Radamax."

(See page 257.)

Spark-C—See Westinghouse Lamp Co.

Westinghouse Lamp Co., 165 Broadway, New York, N. Y. (See page 509.)

TESTING BUSHINGS—See Bushings, Spark Plug Testing**TESTING DYNAMOMETERS—See Dynamometers, Electric Testing****TESTING FIXTURES, MAGNETO FOR FORDS—See Fixtures, Magneto Aligning and Testing****TESTING HYDROMETERS—See Hydrometers, Testing****TESTING INDICATORS—See Indicators, Gasoline Engine****TESTING INSTRUMENTS, ELECTRICAL CIRCUIT—See Instruments, Electrical Circuit Testing****TESTING INSTRUMENTS, GEAR—See Instruments, Gear Testing****TESTING INSTRUMENTS, METAL—See Instruments, Metal Testing****TESTING INSTRUMENTS, RUBBER—See Instruments, Rubber and Felt Testing****TESTING INSTRUMENTS, STORAGE BATTERY—See Instruments, Battery Testing****TESTING MACHINES, SPRING—See Machines, Spring Testing**

Everything is listed under the NOUN or principal word

TERMINALS

The Only Complete Line

The Sherman Line includes a wire or cable terminal for every purpose in motor car construction.

U. S. Pat.



Release 14401

Sherman Soldering Lugs

Seamless Copper

Electrically and Mechanically Perfect



Sheet Copper and Brass.

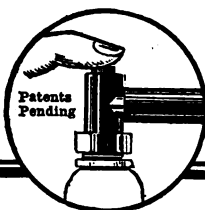
A large range of styles and sizes.

Assortments for the trade, in attractive display boxes. Contain only the best selling styles.



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H. B. SHERMAN MANUFACTURING CO.
Battle Creek Michigan



Patents Pending

Bayley's Automatic

INSULATED SPARK PLUG TERMINAL

For Automobiles—Motorcycles—
Motorboats—Aeroplanes

Instantly connected—instantly disconnected. "The Button does it!" Forms a rigid contact. The Spring locks it! Attached by hand—no tools needed. Transmits a stronger spark—gives added power. Prevents short circuits, shocks and burnt fingers. Practical—time saving—economical. Highest quality. To introduce them we will give

4 B. A. T. Terminals for \$1.50

with a money back guarantee if not satisfied. Jobbers and Dealers write for proposition.

B. A. T. TERMINAL CO.
105 Vanderveer St. Brooklyn, N. Y.

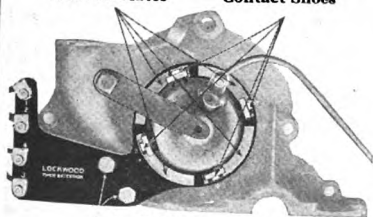
LOCKWOOD Timer Extension

FOR

Ford Cars and Trucks

Contact Plates

Contact Shoes



Bolts Holding Extension

List Price **\$350** in U.S.A.

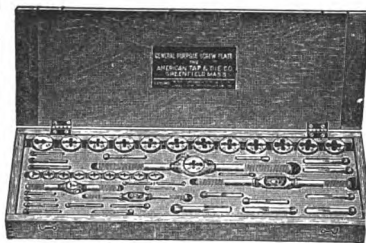
Eliminates the loose wires running under oil filling cup and attaching to timer, avoiding any chance for wires becoming oil-soaked or insulation to become worn off. Write for descriptive literature.

Dealers: If your jobber cannot supply you, order direct

LOCKWOOD PRODUCTS CO.
Metropolitan Bank Building MINNEAPOLIS, MINN.

GENERAL PURPOSE SCREW-PLATE

THREE SCREW-PLATES IN ONE



Most complete and useful set ever offered. Machine Screw sizes from number two to number eighteen. U. S. Standard sizes from 3/16 to 1/2 inch. S. A. E. (A. L. A. M.) 1/4 to 5/8 in. Twenty-three sizes in all. Two Tap Wrenches and two Die Stocks.

Cutting 2nd, 3rd, 4th, 6th, 8th, 10th, 12th, 14th, 16th, 18th M. S. Sizes.
3/16th, 1/4th, 5/16th, 3/8th, 7/16th, 1/2th U. S. Standard.
1/4th, 5/16th, 3/8th, 7/16th, 1/2th, 9/16th, 5/8th, S. A. E. (A. L. A. M.) Standard.

LIST PRICE, \$42.00

Send for our Catalogue containing Ninety-six assortments of Screw-Plates.

AMERICAN TAP & DIE CO.
Greenfield, Mass.

Please mention The Automobile Trade Directory

TESTING PLUGS, RADIATOR, FOR FORDS—See Plugs, Radiator Testing

TESTING TANKS—See Tanks, Inner Tube Testing

THERMOMETER LOCKS, RADIATOR—See Locks, Radiator Thermometer

THERMOMETERS, AUTOMOBILE—See Meters, Water Temperature Indicating

THERMOMETERS, RADIATOR—See Meters, Water Temperature Indicating

THERMOMETERS, Vulcanizer

Genco—See General Scientific Equipment Co.
General Scientific Equipment Co. (North Philadelphia), Philadelphia, Pa. "Genco."
Queen-Gray Co., 616-18 Chestnut St., Philadelphia, Pa.

Randall-Falchney Co., 76 Atherton St., Boston, Mass.

Standard Thermometer Co., 65 Shirley St., Roxbury, Mass. (See page 787.)

Storage Battery Supply Co., 239 E. 27th St., New York, N. Y.

Taylor Instrument Companies, 95 Ames St., Rochester, N. Y.

Weinhagen & Hespe, 159-65 Leonard St., New York, N. Y.

Wilson & Wilson (Waverly Sta.), Boston, Mass.

THERMOSTATIC CARBURETOR REGULATORS FOR FORDS—See Regulators, Thermostatic Carburetor

THERMOSTATS, Storage Battery

(Small thermostat to be attached to battery to indicate by means of colored lights the temperature of the battery)

Resco Products Co., Jamestown, N. Y. "Rescue."

Rescue—See Resco Products Co.

THERMOSTATS, WATER CIRCULATION REGULATING—See Regulators, Water Circulating

THIMBLES and FERRULES, Air-plane Wire

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y.

Koebllings Sons Co., John A. S. Broad & Canal Sts., Trenton, N. J.

THREAD CUTTING COMPOUNDS—See Lubricants, Cutting

THREAD, Top and Upholstery

American Thread Co., 260 W. Broadway, New York, N. Y.

Challenge—See Summit Thread Co.

Columbia—See Meyer Thread Works.

Crescent—See Meyer Thread Works.

F. M. C.—See French Thread Mills.

Fremo—See French Thread Mills.

French Thread Mills, Cutler St., Warren, R. I.

"F. M. C." "Fremo." "Speedway."

Hub—See Meyer Thread Works.

Japerica—See Seamans & Cobb Co.

Lockstitch—See Meyer Thread Works.

Meyer Thread Works, John C., 1449 Middlesex St., Lowell, Mass. "Hub" "Crescent," "Columbia," "Rugby," "Lockstitch."

Royal—See Summit Thread Co.

Rugby—See Meyer Thread Works.

Seaco—See Seamans & Cobb Co.

Seamans & Cobb Co., 140 Essex St., Boston, Mass. "Seaco." "Japerica."

Speedway—See French Thread Mills.

Summit Thread Co., Summit St., East Hampton, Conn. "Royal." "Challenge."

Ten Eick, Cornelius, 253 W. 47th St., New York, N. Y. (Distributors.) (See page 81.)

THREAD, UPHOLSTERY—See Thread, Top

THREADING TOOLS—See Tools, Threading

THROTTLE LEVER GRIPS—See Grips, Spark and Throttle Lever

THROTTLE LEVER LOCKS FOR FORDS—See Locks, Spark and Throttle Lever

THROTTLE ROD ANTI-RATTLERS FOR FORDS—See Anti-Rattlers, Spark and Throttle Rod

THROTTLE VALVES—See Valves, Steam Throttle

THRUST BEARINGS FOR FORDS—See Bearings, Drive Gear Ball and Roller Thrust

THRUST BEARINGS, CRANK SHAFT FOR FORDS—See Bearings, Crank Shaft Thrust

THUMB NUTS—See Nuts, Thumb

THUMB SCREWS—See Screws, Thumb

TIGHTENERS, STUD BOLT—See Extractors, Stud Bolt

TIGHTENERS, Tire Chain

Dow & Cole, 1173 Elm St., Manchester, N. H. "Spider."

Harp Mfg. Co., Galax, Va.

Hykon Mfg. Co., 153 E. State St., Alliance, O. "Liberty."

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Distributors East of the Mississippi River for Standley Adjusters.) (See page 138B.)

Liberty—See Hykon Mfg. Co.

Merchant (Corp.), M. H., 238 Emma St., Syracuse, N. Y.

Midland Co., South Milwaukee, Wis. "Sharto." (See page 530.)

Powers Mfg. Co., Waterloo, Iowa.

Schartow Mfg. Co. (So. Milwaukee), Milwaukee, Wis. "Sharto."

Sharto—See Schartow Mfg. Co.

Sharto—See Midland Co.

Spider—See Dow & Cole.

Standley Skid Chain Co., Boone, Ia. (See page 138B.)

Trantum, F. W., 144 Allen St., Jamestown, N. Y.

Wagner Mfg. Co., Cedar Rapids, Iowa.

TIGHTENING COMPOUNDS—See Compounds, Wood Wheel Tightening

TILTING BODIES—See Bodies, Special Dumping

Everything is listed under the NOUN or principal word



I. X. L. Shortproof Ignition System for Fords

Complete with wires. Bakelite timer case and replaceable Bakelite ring.

No Exposed Wires
No Exposed Terminals
No Possibility of Short Circuits
No Broken Connections or any Current Leakage

Flexible Metal Conduit
Diecast Rotor Assembly and Copper-Carbon Brush
Price of I. X. L. Shortproof Ignition System Complete with Wires and Rotor Assembly, \$5.00

Dealers and Jobbers—Write for details. Will be sold through regular channels only as rapidly as Jobber connections are established. Write for sample.

ECLIPSE SPECIALTY MANUFACTURING CO. 549 West Washington Blvd. CHICAGO, ILL.



Illustrating the effects of the jumping roller in ordinary timers.



The Necedah Timer—no waves or bumps even after unusually long service.

NECEDAH TIMER

THE BRUSH IS THE THING
for Ford Cars and Fordson Tractors

The weakness of most timers lies in the fact that the uneven pressure of the roller wears down the steel contacts into waves and bumps.

When the roller passes over these uneven surfaces, it causes "arcs" and "missing," hard starting and uneven running and the life of the timer is cut short.

BUILT FOR UNLIMITED SERVICE

Why not sell your customers a timer that is built for unlimited service—one that will give full value in mileage? The perfected brush assembly of the Necedah Timer insures correctly timed contacts and even wear on the fibre ring and contact segments. The brush presses squarely and firmly against the race and it can't possibly "skip" or "jump."

List Price, Complete, \$2.50

Write for information and attractive trade prices

NECEDAH MANUFACTURING CO.
NECEDAH, WISCONSIN

Look for  this Mark

SCREW PLATES, TAPS, DIES, REAMERS, PIPE TOOLS, MACHINE TOOLS for AUTOMOTIVE USE



Both "USS" and "SAE" Threads

GREENFIELD TAP AND DIE CORPORATION

GREENFIELD, MASSACHUSETTS
Canadian Plant: Greenfield Tap & Die Corporation of Canada, Limited, Galt, Ontario
SEND FOR SMALL TOOL CATALOG (701)

Please mention The Automobile Trade Directory

TILTING WHEEL ATTACHMENTS FOR FORDS—See Attachments, Tilting Wheel

TILTING WHEELS—See Wheels, Steering

TIME CHECKS—See Checks, Brass, Time, Tool and Pay

TIME RECORDERS—See Registers, Auto-graphic and Manifold

TIME RECORDING CLOCKS—See Clocks, Time Recording

TIME STAMPS—See Stamps, Time

TIMER BRUSHES FOR FORDS—See Brushes, Timer

TIMER CUTTERS FOR FORDS—See Grinders and Cutters, Timer Refacing

TIMER ELEVATING ATTACHMENTS FOR FORDS—See Brackets, Timer Elevating

TIMER ELEVATING BRACKETS FOR FORDS—See Brackets, Timer Elevating

TIMER GRINDERS FOR FORDS—See Grinders & Cutters, Timer Refacing

TIMER TERMINALS FOR FORDS—See Terminals, Timer

TIMER WIRE GUARDS FOR FORDS—See Guards, Timer Wire

TIMERS, Ignition or Spark

(See also Systems, Battery Ignition)

Almy Water Tube Boiler Co., ft. Rhoades St., Providence, R. I.

Asch & Co., Inc., 16-24 W. 61st St., New York, N. Y. (See page 247.)

Bolcourt-Lopez Mfg. Co., San Antonio, Tex. Capitol Tool & Die Works, 1100 Oakdale Ave., Chicago, Ill. "Star."

Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)

Cuno Engineering Corp., Meriden, Conn. (See page 525.)

Hammerblow—See Herz.

Heco—See Heinze Electric Co.

Heinze Electric Co., Lawrence St., Lowell, Mass. "Heco."

Herz, 182 Locust Ave., New York, N. Y. "Hammerblow." (See page 682.)

Lundgren Mfg. Co., Hale Bldg., Philadelphia, Pa.

Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 857.)

Modern Tool & Stamping Co., 311-17 S. Clinton St., Chicago, Ill.

New York Coll Co., 338-40 Pearl St., New York, N. Y. "Rhoades."

Omar Tire & Rubber Co., 42 W. 39th St., New York, N. Y. "Spad."

Rhoades—See New York Coll Co.

Sintz—See Wilmarth & Morman Co.

Spad—See Omar Tire & Rubber Co.

Splittdorf Electrical Co., 98 Warren St., Newark, N. J.

Star—See Capitol Tool & Die Works.

Wilmarth & Morman Co., 1179 Monroe Ave., N. W., Grand Rapids, Mich. "Sintz."

X-Cell-All Co., 565 W. Washington Blvd., Chicago, Ill.

TIMERS, Ignition or Spark, for Fords

(See also Systems, Single Spark)

A. E.—See Chicago Automotive Engineering Corp.

A-K—See Angsten-Kox Co.

Accurate Machine Mfg. Co., 234 Fifth Ave., S., Minneapolis, Minn.

Alpha Timer & Accessories Co., 232 St. Paul St., Baltimore, Md.

American Automobile Accessories, 1853 N. Tripp Ave., Chicago, Ill. "Shortless."

American Engineer Factories, Inc., 30 Church St., New York, N. Y. "Pony."

American Metal Products Co., 153 W. Jackson Blvd., Chicago, Ill. "March."

Anco—See Anderson Co.

Anderson Co., 232 St. Joseph St., South Bend, Ind. "Anco."

Anderson & Miller, 791 River St., Mattapan, Mass.

Angsten-Kox Co., 221-23 W. Randolph St., Chicago, Ill. "A-K."

Apco Mfg. Co., 703 Eddy St., Providence, R. I.

Auto Components, 56 E. Randolph St., Chicago, Ill. "Red Star."

B. K. F. Corp., 20 E. Jackson Blvd., Chicago, Ill.

Bay State Pump Co., 564 E. First St., (S. Boston), Boston, Mass.

Bemus—See Motor Specialties Co.

Benford Auto Products, Inc., Mt. Vernon, N. Y. "Monarch." (See page 645.)

Bestofall—See Necedah Mfg. Co.

Big Four—See Dorchester Machine & Tool Works.

Blublaue Motor Specialties Corp., 49-51 W. 66th St., New York, N. Y.

(See page 859.)

Blue Ribbon—See Ferro Mfg. Co.

Cady—See Diemoulding Production Co.

Chicago Automotive Engineering Corp., 314-38 N. Irving Ave., Chicago, Ill. "A. E."

Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)

Cook Commutator Co., 4103 New Utrecht Ave., Brooklyn, N. Y. (See page 861.)

Crystal Timers, Inc., Corning, N. Y.

(See page 861.)

Cuno Engineering Corp., Meriden, Conn. (See page 525.)

Cyclone—See Holland Brass Works.

Dean—See Tisch Auto Supply Co.

Diemoulding Production Co., Canastota, N. Y.

"Cady."

Dixon—See U. S. Auto Supply Co.

Dorchester Machine & Tool Works, 70 Freeport St., "Dorchester," Boston, Mass. "Big Four."

Duff Distributing Co., 2 Rector St., New York, N. Y. "Randall."

Dunham Co., Thos., Aurora, Ill.

(See page 145.)

Duntley, J. W., 1004 Michigan Ave., Chicago, Ill.

Duplex Products Co., 3520 Princeton Ave., Chicago, Ill.

Eclipse Specialty Mfg. Co., 549 W. Washington Blvd., Chicago, Ill. "IXL."

(See page 855.)

Eclipse Timer Mfg. Co., 2907 Meinecke Ave., Milwaukee, Wis.

Economy Timer Co., Box AX, Norwalk, Conn. (See page 859.)

Efemco—See Foster, Merriam & Co.

Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O. "Yankee."

Ferro Mfg. Co., 2011 Michigan Ave., Chicago, Ill. "Blue Ribbon."

(See page 537.)

Ford Mfg. Co., Howard, Coldwater, Mich.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)

Goodrich-Lechart Mfg. Co., Hamburg, Pa. (See page 933.)

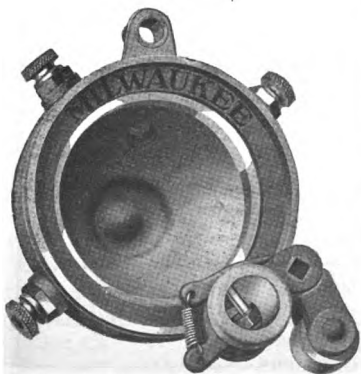
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Ford Owners Buy 4,000 of these Timers per Day!



"That name Milwaukee on shell and brush assembly means more to me than all the smooth sales talk I ever heard. I know the Milwaukee is good, and I'll let the other fellow get stung on the unknowns"

—says the Expert on Fords



THE *Milwaukee Timer* is the largest selling Ford replacement. Over 3,000,000 Fords use this type of timer. Thousands of dealers handle no other timer.

Built by ignition experts of 15 years' timer manufacturing experience. Wonderfully durable, perfectly finished, thoroughly tested—in every way the most efficient and dependable timer made. Sold and recommended by 89% of all Auto Supply Jobbers and by 45,000 dealers. The *Milwaukee* is an all-year money maker for you.

If you're not stocked, ask your jobber

MILWAUKEE AUTO ENGINE
& SUPPLY CO.
MILWAUKEE, U. S. A.

**MILWAUKEE
TIMER *for* FORDS**

RETAILS at \$2⁰⁰
(West of Rocky Mts. \$2.10)

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TIMERS, Ignition or Spark, for Fords (Continued)

Gould-Mersereau Co., 48 W. 38th St., New York, N. Y.
 Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. "Sturdy." (See page 265.)
 Hammerblow—See Herz.
 Herz, 182 Locust Ave., New York, N. Y. "Hammerblow." (See page 682.)
 Holland Brass Works, 1110 S. Michigan Ave., Chicago, Ill. "Cyclone."
 Holmes Special Tool Co., 38 Canal St., New Haven, Conn. "Pourier."
 Howe Lamp & Mfg. Co., 3656 N. Francisco Ave., Chicago, Ill.
 Huskee—See Newton Motor Co.
 I. I.—See Improved Ignition Co.
 IXL—See Eclipse Specialties Mfg. Co.
 Improved Ignition Co., 200 Cannon St., Bridgeport, Conn. "I. I."
 J. & B. Mfg. Co., Pittsfield, Mass.
 J. P. Specialty, 53 W. Jackson Blvd., Chicago, Ill. "Pep."
 Jamber Mfg. Co., 911 Center St., Milwaukee, Wis.
 Jonas, C. N. & F. W., 908 S. Dearborn St., Chicago, Ill. (Sales Representatives for Mechanical Production Co., Milwaukee, Wis. "Life." (See page 138A.)
 K-L—See M-R Mfg. Co.
 Kales Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich.
 Kant Short Timer Co., 211 Park St., New Haven, Conn.
 Lee—See Never Break Products Co.
 Leich Electric Co., Genoa, Ill. "Radd."
 Libby Auto Products Co., 522 Fifth Ave., New York, N. Y.
 Life—See Jonas, C. N. & F. W.
 McCulloch Mfg. Co., 216 High St., Boston, Mass.
 M-R Mfg. Co., 2377 O St., Lincoln, Nebr. "K-L."
 Mapson Mfg. Co., 2931 Stephenson Ave., Los Angeles, Cal. "Triple-Life."
 March—See American Metal Products Co.
 Master—See Reidville Mfg. Co.
 Mechanical Production Co.—See Jonas, C. N. & F. W.
 Meikle Mfg. Co., Springfield, Ill. "Springfield." (See page 547.)
 Metalware Corp., 228 W. Superior St., Chicago, Ill. (See page 859.)
 Mid West Co., 30 Ionia Ave., S. W. Grand Rapids, Mich.
 Mil-Mac Mfg. Co., 16th St. & Glenwood Ave., Philadelphia, Pa. "Never-Miss."
 Mill City Co., Minneapolis, Minn.
 Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 857.)
 Monarch—See Benford Auto Products, Inc.
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Beaver St., Waltham, Mass. "Bemus," "Mosco."
 Needah Mfg. Co., Needah, Wis. "Best-of-all." (See page 855.)
 Nelson Timer Corp., 626 E. Water St., Milwaukee, Wis. (See page 861.)
 Never Break Products Co., Bangor, Pa. "Lee." (See page 351.)
 Never-Miss—See Mil-Mac Mfg. Co.
 Newton Motor Co., Old South Bldg., Boston, Mass. "Huskee."
 Nowury—See Worthmore Mfg. Co.
 Pacific Auto Specialty Co., 679, 27th Ave., San Francisco, Cal.
 Pep—See J. P. Specialty Co.
 Pony—See American Engineer Factories, Inc.
 Pourier—See Holmes Special Tool Co.
 Radd—See Leich Electric Co.
 Randall—See Duff Distributing Co.
 Recto Mfg. Co., 23 W. Third St., Cincinnati, O.

Red Star—See Auto Components.
 Reidville Mfg. Co., Waterbury, Conn. "Master."
 Saginaw Metal Parts Corp., Williamson & River Sts., Saginaw, Mich.
 Schofield Mfg. Co., 1917 E. 61st St., Cleveland, Ohio.
 Shortless—See American Automobile Accessories.
 Signalite Mfg. Co., 523 S. Clinton St., Chicago, Ill. "Signo."
 Signo—See Signalite Mfg. Co.
 Springfield—See Meikle Mfg. Co.
 Sturdy—See Gray-Hofman Co.
 Thomas-Andrews Corp., Waukegan, Ill.
 Tisch Auto Supply Co., 522 Turner Ave., Grand Rapids, Mich. "Dean."
 Trico Products Corp., 624-28 Ellicott St., Buffalo, N. Y.
 Triple-Life—See Mapson Mfg. Co.
 U. S. Auto Supply Co., 3845-49 S. Wabash Ave., Chicago, Ill. "Dixon." (See page 955.)
 U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.
 U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.
 Visible Commutator & Specialties Co., Highlands, N. J.
 Vulcan Die Casting Corp., 1126-36 W. Belden Ave., Syracuse, N. Y.
 Walker Accessories, 1991 Broadway, New York, N. Y.
 Walsh, W. J., 215 N. Michigan Ave., Chicago, Ill. (See page 859.)
 Wayne Engineering Co., 1400 Broadway, New York, N. Y.
 Winters Co., Leonard R., 5315 N. Second St., Philadelphia, Pa.
 Wisconsin Timer Mfg. Corp., Menomonee Falls, Wis. (See page 875.)
 Worthmore Mfg. Co., 14-16 Western Ave., Minneapolis, Minn. "Nowury."
 Wright Automatic Timer Corp., 30 N. La Salle St., Chicago, Ill.
 Yankee—See Enterprise Brass & Plating Co.

TIMERS, Tractor

McCulloch Mfg. Co., 216 High St., Boston, Mass.
 Milwaukee Auto Engine & Supply Co., Milwaukee, Wis. (See page 857.)
 U. & J. Carburetor Co., 501-09 W. Jackson Blvd., Chicago, Ill.

TIPPERS, OIL BARREL AND CAN—See Holders, Oil Barrel and Can

TIPS, BURNER—See Burners, Acetylene

TIRE ALARMS—See Alarms, Tire

TIRE BANDAGE WRAPPING MACHINES—See Machines, Tire Bandage Wrapping

TIRE BANDS—See Bands, Non-Skid Truck

TIRE BOLTS—See Bolts, Stove

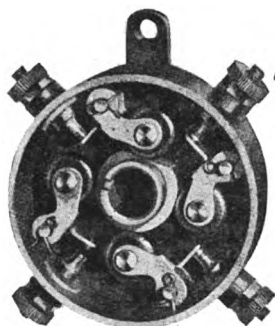
TIRE BUFFERS—See Machines, Electric Tire Buffing

TIRE BUFFING MACHINES, ELECTRIC—See Machines, Electric Tire Buffing

TIRE BUILDING STANDS—See Stands, Tire Building

TIRE CARRIERS—See Holders, Tire

Everything is listed under the NOUN or principal word



The
"Fansteel"
Magneto
Break
Timer

100%
Perfect

Absolutely the Last Word in Timers

This Timer is built by men of long experience in ignition work, is of most excellent construction, has the endorsement of the foremost engineers and has lived up to its reputation. It saves current, oil, gas, and increases mileage.

Licensed under Patent 1,340,857, May 18th, 1920.
This is the only Timer of this style covered by patent.

This is absolutely the one Timer that will satisfy your trade. Jobbers—Dealers—write for proposition.

W. J. WALSH

528 Monadnock Block, 53 West Jackson Blvd.,
Chicago, Ill.

"SEES ALL" MOTOR EYE "TELLS ALL"

THE MOTOR EYE takes the temperature directly from the water in the radiator—you do not have to wait for temperature indication until steam is up, as the slightest change in the temperature of the water is shown instantly in the thermometer of the MOTOR EYE.

The stem attached to the bottom of the MOTOR EYE extends down into the water, THAT houses and protects the delicate thermometer from injury.

The Motor Eye can be furnished with special design name plates on back for all makes of cars, trucks and tractors.

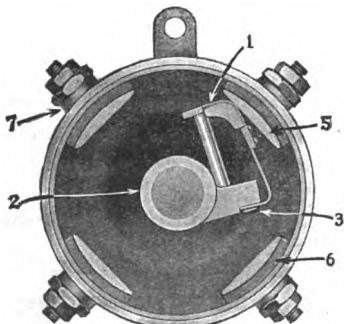
Manufactured by

Metalware Corporation

228 W. Superior Street, Chicago, Ill.

Economy Timers FOR FORD CARS

Require no oil—Will not short circuit



Wearing parts fully replaceable.

A positive wiping contact.

Make starting easy

Sold only on a money-back GUARANTEE

ECONOMY TIMER CO.
Box AX NORWALK, CONN.

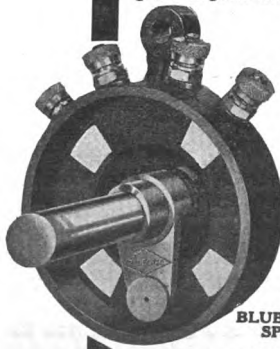
The BLUBLAZE TIMER FOR FORD CARS

Terminals are Sealed

The only practical way to build a timer is of Condensite, same as all other automobile timers. The Condensite shall and Carbon Brush will do for the Ford what a magneto does for all other gas engines. Its principles and construction of Condensite is far superior to all other makes of Ford Timers, giving positive ignition and built to last indefinitely, same as a high grade magneto does.

Jobbers
Dealers

A pleased and satisfied customer means repeat orders. Sell the Blublaze Timer and double your sales. Write for full particulars. Our proposition is good.



**BLUBLAZE MOTOR
SPECIALTIES
CORP.**

Price \$3

48-51 West 66th St.
New York, N. Y.

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- TIRE CASES**—See Covers, Spare Tire
TIRE CEMENT—See Cement, Tire Repair
TIRE CHAIN ADJUSTERS—See Tighteners, Tire Chain
TIRE CHAIN FASTENERS—See Fasteners, Tire Chain
TIRE CHAIN LOCKS—See Locks, Tire Chain.
TIRE CHAIN REPAIR LINKS—See Links, Tire Chain Repair
TIRE CHAIN SPRINGS—See Tighteners, Tire Chain
TIRE CHAIN TIGHTENERS—See Tighteners, Tire Chain
TIRE CHAIN TOOLS—See Tools, Tire Chain Repair
TIRE CHAIN WASHING MACHINES—See Machines, Tire Chain Washing
TIRE CHAINS—See Chains or Grips, Non-Skid
TIRE CHANGERS—See Machines, Tire Removing and Replacing
TIRE CORES—See Molds, Tire Vulcanizing
TIRE COVERS—See Covers, Spare Tire
TIRE CURING BAGS—See Bags, Steam Tire Curing
TIRE DEFLATING TOOLS—See Tools, Tire Deflating
TIRE FABRICS—See Fabric, Cotton Tire
TIRE FILLERS—See Compounds, Tire Filling
TIRE FILLING COMPOUNDS—See Compounds, Tire Filling
TIRE GAGES—See Gages, Tire
TIRE HOLDERS—See Holders, Tire
TIRE INFLATERS—See Pumps; also Tanks
TIRE INFLATING TANKS—See Tanks, Tire Inflating
TIRE INSPECTING MACHINES—See Machines, Tire Inspecting
TIRE IRONS—See Tools, Tire
TIRE KITS—See Kits, Tire Repair
TIRE KNIVES—See Knives, Tire Repair
TIRE LIFTING JACKS—See Jacks, Tire Lifting
TIRE LOCKS—See Locks, Spare Tire
TIRE MAKING TOOLS—See Tools, Tire Making
TIRE MASTICS—See Compounds, Tire Repair
TIRE MICA—See Talc, Tire
TIRE MOLDS—See Molds, Tire Vulcanizing
TIRE PAINTS—See Paints, Rubber
TIRE PATCHES—See Patches, Tire
TIRE PLASTICS—See Compounds, Tire Repair
TIRE PLUGS—See Plugs, Tire
TIRE POWDER—See Talc, Tire
TIRE PRESERVING COMPOUNDS—See Compounds, Tire Preserving
TIRE PRESSES—See Presses, Tire
TIRE PRESSURE GAGES—See Gages, Tire Pressure
TIRE PROTECTORS—See Treads, Tire
TIRE PUMP CONNECTION WASHERS—See Washers, Tire Pump Connection
TIRE PUMP CONNECTIONS—See Connections, Tire
TIRE PUMPS—See Pumps
TIRE PUTTY—See Compounds, Tire Repair
TIRE RACKS—See Racks, Metal Tool, Stock and Tire
TIRE REMOVING MACHINES—See Machines, Tire Removing and Replacing
TIRE REPAIR CEMENT—See Cement, Tire Repair
TIRE REPAIR COMPOUNDS—See Compounds, Tire Repair
TIRE REPAIR KITS—See Kits, Tire Repair
TIRE REPAIR KNIVES—See Knives, Tire Repair
TIRE REPLACING MACHINES—See Machines, Tire Removing and Replacing
TIRE RETAINERS—See Fillers, Tire Bead
TIRE SAVING JACKS—See Jacks, Tire Saving
TIRE SKIVING MACHINES—See Machines, Tire Skiving
TIRE SLEEVES—See Sleeves, Tire
TIRE SPREADERS—See Tools, Tire
TIRE STITCHERS—See Machines, Double Tread Tire Stitching
TIRE STITCHING MACHINES—See Machines, Double Tread Tire Stitching
TIRE STRAPS—See Straps, Leather
TIRE TALC—See Talc, Tire
TIRE TANKS—See Tanks, Tire Inflating

Everything is listed under the NOUN or principal word

COOK COMMUTATORS

TWO COMPLETE TIMERS IN ONE

Terminals not exposed to Oil and Water.
No short circuits—all timer trouble eliminated.
Guaranteed 100,000 miles.

Model A—Without wires, \$3.50.
Model B—With single wires, \$5.00.
Model C—Brass trimmed double wiring, \$7.50.

DEALERS AND JOBBERS WRITE FOR PROPOSITION

COOK COMMUTATOR CO.

4103 New Utrecht Ave.

BROOKLYN, N. Y.

The Famous Crystal Timer

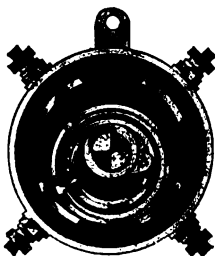
Wipe Contact of Tool Steel. Famous
Pyrex Glass Insulation

Jobbers, Dealers and Agents—
Your Opportunity

Territory is going fast.
Write today for sample
offer and liberal trade
discounts. Fast selling,
sure repeating, profitable.
A gold mine for
salesmen, distributors
and dealers. Immediate
delivery. Unlimited
production.

Crystal Timers, Inc.

Corning, N. Y.



NELSON BALL BEARING TIMER for FORD CARS and TRUCKS and FORDSON TRACTORS

Guaranteed to outlast four timers of any other make.

Retail Price \$3.50—Dealers and jobbers tell us they could sell it at twice the price.

The Nelson is unquestionably the best replacement timer made, and our proposition is the most attractive.

Write or wire for it today.

NELSON TIMER CO.

626 East Water St., Milwaukee, Wis.

TIRE DISTRIBUTION

Imagine a tire distributor or retailer having to search through the price lists of two hundred manufacturers whenever he seeks information on sizes, styles or prices of a single make!

Yet this information is vital to his business; he must have it in some form—

And that is why you find THE TIRE RATE BOOK on the desks of practically all distributors and dealers whose trade is worth securing.

Published quarterly, THE TIRE RATE BOOK is consulted every day of the year by distributors and dealers in every part of the country.

These are the men you must reach if you seek wide and profitable distribution for the tires, tubes or accessories you make. And THE TIRE RATE BOOK is the most efficient shortcut to productive trade connections.

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Mallers Building
CHICAGO

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TIRE TOOLS—See Tools, Tire; also Tools, Tire Valve Rethreading

TIRE TREAD PEELING TOOLS—See Tools, Tire Tread Rolling and Peeling

TIRE TREAD ROLLING TOOLS—See Tools, Tire Tread Rolling & Peeling

TIRE TREADS—See Treads, Tire

TIRE VALVE DUST CAPS—See Caps, Tire Valve Dust

TIRE VALVE REMOVERS—See Machines, Tube Deflating and Valve Removing

TIRE VALVE TOOLS—See Tools, Tire Valve Rethreading

TIRE VALVES—See Valves, Tire

TIRE VULCANIZERS—See Vulcanizers

TIRE VULCANIZING TOOLS—See Tools, Tire Vulcanizing

TIRE WRAPPING MACHINES—See Machines, Tire Bandage

TIRES, Pneumatic

(See also Tubes, Inner)

Achilles Rubber & Tire Co., Binghamton, N. Y.

Acme Rubber Mfg. Co., Trenton, N. J.

Advance Rubber Co., 21-39 Gardner Ave., Brooklyn, N. Y. "Top Notch."

Ajax Rubber Co., 220 W. 57th St., New York, N. Y. "Road King." (See page 871.)

Akron Tire & Rubber Co., 24-26 Columbus Ave., Boston, Mass. (Dealers.) (See page 864.)

Allen Tire & Rubber Co., 510 Hamilton St., Allentown, Pa.

Allsteel Ridewell Tire & Rubber Co., Dayton, O. "Artyr." (See page 87.)

Amazon Rubber Co., Akron, O.

Ambassador Tire Corp., 957 Eighth Ave., New York, N. Y. (Distributors.) (See page 841.)

American—See Mansfield Tire & Rubber Co.

American Rubber & Tire Co., 100 Beach St., Akron, O.

Anchor—See New Jersey Car Spring & Rubber Co.

Angola Tire & Rubber Co., N. Division & Pine Sts., Buffalo, N. Y.

Apollo Tire & Rubber Co., 3962 E. 93rd St., Cleveland, O.

Arabian—See Defiance Tire Factories.

Archer Cord Tire & Rubber Co., 711-17 15th Ave., N. E., Minneapolis, Minn.

Ardmore-Akron Tire & Rubber Co., Herskowitz Bldg., Oklahoma City, Okla. "Scout."

Armstrong Rubber Co., 132-43 Monroe St., Garfield, N. J.

Artyr—See Allsteel Ridewell Tire & Rubber Co.

Auburn—See Double Fabric Tire Co.

Ashland Tire & Rubber Co., Clark Ave. & E. Eighth St., Ashland, O. "Stalwart."

Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. "Lyon."

Autocrat—See McClaren Rubber Co.

Batavia Rubber Co., Batavia, N. Y. "Merlin."

Beacon Tire Co., Main & River Sts., Beacon, N. Y.

Bergougnan Rubber Corp., 2000 E. State St., Trenton, N. J.

Big J—See Jefferson Rubber Co.

Biltwell Tire & Rubber Co., Akron, O. "Hard-Wear."

Black Hawk Tire & Rubber Co., 2020 E. Walnut St., Des Moines, Iowa.

Blekre Tire & Rubber Co., St. Paul, Minn. (See page 872.)

Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.

Bowling Green Rubber Co., 1202 Prospect Ave., Toledo, O.

Braender Rubber & Tire Co., Rutherford, N. J. "Bull Dog."

Bricton Mfg. Co., 14th & Farnam Sts., Omaha, Neb.

Broadway Tire Jobbers, Inc., 250 W. 54th St., New York, N. Y. (Dealers.) (See page 864.)

Brunswick-Balke-Collender Co., 623-33 S. Wabash Ave., Chicago, Ill.

Buckskin—See Tuscan Tire & Rubber Co.

Bucyrus—See Henderson Tire & Rubber Co.

Bull Dog—See Braender Rubber & Tire Co.

Burdick Tire & Rubber Co., Noblesville, Ind.

Burlock Non-Skid Tire Corp., 828 Seventh Ave., New York, N. Y.

Butler Bros., 426 W. Randolph St., Chicago, Ill. "Sheridan."

Canton-Blackstone Co., Canton, O.

Carlisle Tire Corp., Fairfield Ave., Stamford, Conn.

Carspring—See New Jersey Car Spring & Rubber Co.

Cascade Tire & Rubber Co., Ravenna, O.

Century-Plainfield Tire Co., Plainfield, N. J.

Century Rubber Works, Cicero, Ill.

Channon Co. H., 150 N. Market St., Chicago, Ill. "Gripwell."

Clermont Rubber Co., Trenton, N. J.

Cleveland—See Standard Tire Co.

Cleveland Rubber Cork Co., Berea Rd. & W. 114th St., Cleveland, O.

Clingstone—See Lancaster Tire & Rubber Co.

Coast Tire & Rubber Co., 48th Ave. & 12th St., Oakland, Cal.

Columbia Tire & Rubber Co., Mansfield, O. "Para-Bell."

Columbus Tire & Rubber Co., 555 W. Goodale St., Columbus, O.

Combination Rubber Mfg. Co., Bloomfield, N. J. "Viking."

Comet—See Star Rubber Co.

Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."

Converse Rubber Shoe Co., Edgeworth St., Malden, Mass. "Tuff-E-Nuff."

Cooper—See Giant Tire & Rubber Co.

Cord Tire Corp., Chester, W. Va. "Superior."

Corduroy—See Grand Rapids Tire & Rubber Corp.

Cornhusker—See Nebraska Tire & Rubber Co.

Corona Cord Tire Co. (E. Butler), Butler, Pa. "Coronada."

Coronada—See Corona Cord Tire Co.

Crawford—See Rufenacht Rubber Co.

Crown Tire & Rubber Co., Ralston, Neb.

Cumberland Tire & Rubber Co., 26th & Courtney Sts., Louisville, Ky.

Cunningham & Berrien, 25 W. 43rd St., New York, N. Y. (Eastern Distributors for "Perfection" Tires.) (See page 897.)

Cupples Co., Seventh & Spruce Sts., St. Louis, Mo.

Curtis Tire & Rubber Co., 253 East Ave., Rochester, N. Y.

Dayton Pneumatic Tool Co., Hartford St. & Big Four R. R., Dayton, O. "Green."

Everything is listed under the NOUN or principal word

WITH "ROYAL CORD" giving service unequalled by any other tire, and "NOBBY TREAD" "CHAIN TREAD" and "USCO TREAD" between them filling every possible need in the fabric field, the United States line has a complete answer to the tire question for the dealer who wants merchandising economy and steady, increased business.

United States Tires
are Good Tires



Please mention The Automobile Trade Directory

**CORD
TIRES**

QUALITY



**RED & GREY
TUBES**

The
MALAY RUBBER CO.

Executive Offices
1035 Guardian Building

Cleveland, Ohio



QUALITY TIRES AND TUBES

JORDAN Tires and
Tubes are making a
new chapter in tire
history. Dealers and
Jobbers cash in on the
growing demand.

**1440 Michigan Avenue
Chicago, Ill.**



A welcome addition to
TIREDOM. Constructed
of the **FINEST MATERIALS**. Built to GIVE
SERVICE. Priced SO
LOW as to make it at-
tractive to EVERY
DEALER!

**Here Are the Prices
to the Dealer!**

Size	Tire	Tube
30x3	\$7.25	\$1.25
30x3½	8.50	1.35
31x4	11.50	1.60
32x4	12.95	1.85
33x4	13.80	2.00
34x4	14.09	2.10

BELL TUBES

are fitting companions to
Bell Tires!

Each tube wrapped in tissue
and packed in an attractive
box. A ready seller and a
good money maker.

A Tire and Tube that
will add to your Sales
and Profit.

*All first Quality—Wrapped in
Paper Bearing Name and
Serial Number*

**BROADWAY TIRE
JOBBERS, Inc.**

254 West 54th Street
New York City

BELL TIRES

**BLEMISHED TIRES LARGEST JOBBERS
IN NEW ENGLAND**

We specialize in SECONDS of the best quality

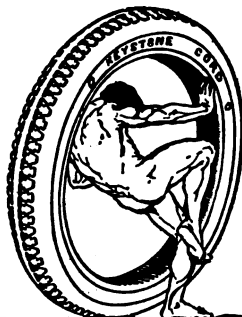
*Tire dealers will find it to their advantage to
communicate with us*

THE AKRON TIRE & RUBBER COMPANY, Inc.
24-26 Columbus Avenue **BOSTON 17, MASS.**

Please mention The Automobile Trade Directory

Increased Profits and Greater Number of Satisfied Customers

Are Assured to Dealers Selling



Keystone Cords

*8,000 MILES of Service
Guaranteed In Writing*

KEYSTONE TIRE & RUBBER CO.
KEYSTONE BLDG., BROADWAY AND 62nd ST., NEW YORK

1921 Is a Keystone Year

Please mention The Automobile Trade Directory

TIRES, Pneumatic (Continued)

Dayton Rubber Mfg. Co., W. River St., Dayton, O. "Thorobred."

De Luxe—See Goodrich Co.

Defiance Tire Factories, 426 Randolph St., Chicago, Ill., "Arabian."

Dellon Tire & Rubber Co., Baltimore, Md.

Denman-Myers Cord Tire Co., Engineers Bldg., Cleveland, O.

Diamond Rubber Co., Akron, O.

Doss Rubber & Tube Co., Murphy Ave., Atlanta, Ga.

Double Fabric Tire Co., 60 W. Ninth St., Auburn, Ind., "Auburn."

Doughty Tire Co., 116 Wickenden St., Providence, R. I.

Dowse Rubber Co., 122 S. Michigan Ave., Chicago, Ill.

Doyle Tire & Rubber Co., 124 South Main St., Akron, O.

Dry Climate Tire Mfg. Co., Arvada, Colo. "Victory."

Dryden Rubber Co., 1014 S. Kildare St., Chicago, Ill.

Dunlop Tire & Rubber Corp. of America, Buffalo, N. Y. (See page 873.)

Eagle Puncture Proof Tire Co., 1662 Broadway, New York, N. Y.

Eagle Rubber Co., Bloomfield, N. J.

Eclipse Cord Tire Corp., Columbus, O.

Edison—See Zeglen Tire & Rubber Co.

Empire Tire & Rubber Co., Mulberry St., & Clinton Ave., Trenton, N. J.

Erie Tire & Rubber Co., First St., Sandusky, O.

Excel Rubber Co., 116 Broad St., Wadsworth, O. "X-L."

Falls Rubber Co., Cuyahoga Falls, O.

Federal Rubber Co. (Cudahy), Milwaukee, Wis.

Fidelity Tire & Rubber Co., Massillon, O.

Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.

First National Tire & Reliner Co., 55 Compau Ave., N. W., Grand Rapids, Mich., "Jaxon." (See page 775.)

Fisk Rubber Co. of New York, Chicopee Falls, Mass. (See page 869.)

Formost—See United Motors Service.

Forster Tire & Rubber Co., Millersburg, O.

G & J Tire Co., 1790 Broadway, New York, N. Y.

General Tire & Rubber Co., E. Market St., Akron, O. "Jumbo."

General Tire & Rubber Co., 330 N. 15th St., Philadelphia, Pa.

Georgia Tire & Rubber Co., Atlanta, Ga.

Giant Tire & Rubber Co., Lima St. & Western Ave., Findlay, O. "Cooper."

Girard—See Victory Tire & Rubber Co.

Gillette Rubber Co., Eau Claire, Wis.

Globe Rubber Tire Mfg. Co., Trenton, N. J.

Goodrich Co., B. F. S. Main St., Akron O. "Silvertown," "De Luxe."

Goodyear Tire & Rubber Co., Akron, O.

Gordon Tire & Rubber Co., 1200 Seventh St., S. W., Canton, O. "H. B. McMasters."

Grand Rapids Tire & Rubber Corp., Pearl & Ottawa Sts., Grand Rapids, Mich. "Corduroy."

Grande—See Republic Rubber Co.

Great Republic Tire & Rubber Mfg. Co., Equity Bldg., Muskogee, Okla.

Green—See Dayton Pneumatic Tool Co.

Greyhound—See Ideal Tire & Rubber Co.

Gripwell—See Channon Co.

Growth Tire Co., 323 Columbus Ave., Boston, Mass.

H. B. McMasters—See Gordon Tire & Rubber Co.

Hanes Rubber Co., Winston-Salem, N. C.

Hannibal Rubber Co., Hannibal, Mo. "Mark Twain."

Hard-Wear—See Biltwell Tire & Rubber Co.

Hardman Rubber Corp., New Brunswick, N. J. "Sure-Grip."

Hardwear Tire Corp. (East Rutherford), Rutherford, N. J.

Hartford Rubber Works Co., 1792 Broadway, New York, N. Y.

Hawkeye Tire & Rubber Co., 215 E. Third St., Des Moines, Ia. "Santa Fe."

Henderson Tire & Rubber Co., 40 Exchange Pl., New York, N. Y. "Bucyrus."

Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.

Holyoke—See New England Tire & Rubber Co.

Hood Rubber Products Co., Bigelow Ave., Watertown, Mass.

Horseshoe—See Racine Auto Tire Co.

Howe Rubber Corp., Codwise Ave., New Brunswick, N. J.

Hubbell Tire & Rubber Co., 6545 Carnegie Ave., Cleveland, O.

Huskie—See United Rubber Co.

Hydro-United Tire Co., Tenth St. & Columbia Ave., Philadelphia, Pa. "Toron."

I. X. L. Tire Builders Equipment Co., Peoria Life Bldg., Peoria, Ill.

Ideal Tire & Rubber Co., 1615 Euclid Ave., Cleveland, O. "Greyhound."

Illinois Tire Co., First Nat'l Bank Bldg., Chicago, Ill.

India Tire & Rubber Co., Akron, O.

Inland Rubber Co., 146 W. 27th St., Chicago, Ill.

Interlocking Cord Tire Co., Everett Bldg., Akron, O.

Iowa Cord Tire Co., Fleming Bldg., Des Moines, Ia.

Jasper Tire & Rubber Co., 320 Main St., Jasper, Ind.

Jaxon—See First National Tire & Reliner Co.

Jefferson Rubber Co., Jefferson, Wis. "Big J."

Johnstone Tire & Rubber Co., La Porte, Ind.

Jordan Tire & Rubber Co., Mallers Bldg., Chicago, Ill. (Dealers.) (See page 864.)

Jumbo—See General Tire & Rubber Co.

KelBro—See Kelley Tire Co.

Kelley Tire Co., Drexel Bldg., Philadelphia, Pa. "KelBro."

Kelley Tire & Rubber Co., West Haven, Conn.

Kelly-Springfield Tire Co., 1710 Broadway, New York, N. Y.

Kenyon Co., C., 754 Pacific St., Brooklyn, N. Y.

Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa.

Keystone Tire & Rubber Co., Broadway & 62nd St., New York, N. Y. (See page 865.)

Knox Tire & Rubber Co., Mt. Vernon, O.

Kokomo Rubber Co., 111 S. Main St., Kokomo, Ind. "Long-Life."

Lagonda Rubber Co., East Palestine, O.

Lancaster Tire & Rubber Co., Long & Fourth Sts., Columbus, O. "Clingstone," "Wiregrip."

Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y.

Lehigh Tire & Rubber Co., Newcastle, Pa.

Liberty Tire & Rubber Co., Green Bay, Wis.

Lincoln Highway Tire Co., Fulton, Ill.

Lion Tire & Rubber Corp., E. Union Street, Lafayette, Ind.

Long-Life—See Kokomo Rubber Co.

Long-Wear—See Quality Tire & Rubber Co.

Everything is listed under the NOUN or principal word



**Leading Dealers
Want Racine Tires**

The successful dealer sells successful tires. To be successful, tires must make good for the user. Therein lies the Racine dealers' opportunity. Racine Multi-Mile Cord and Country Road Fabric make good every day, yielding the mileage satisfaction that means contented repeat customers.

Write Today for Money-Making Facts

Do you know what the Racine dealer proposition is? Do you know why Racine dealers everywhere are successful dealers? You owe it to yourself to get the facts—TODAY. Racine quality is an

indisputable sales asset—just what every dealer needs to bring his customers back. This is the time to set yourself right. But do it on the facts—we got them. *Write today.*

RACINE RUBBER COMPANY, Racine, Wisconsin

RACINE
MULTI-MILE
CORD TIRES

Please mention The Automobile Trade Directory

TIRES, Pneumatic (Continued)

Ludington Rubber Co., Trust Co. Bldg., Ludington, Mich.
 Lyon—See Auto Tire Sales Co.
 McClaren Rubber Co., W. Palmer St., Charlotte, N. C. "Autocrat."
 McClurg—See Midland Tire & Rubber Co.
 McCreary Tire & Rubber Co., 15th & School Sts., Indiana, Pa.
 McGraw Tire & Rubber Co., 4810 Prospect Ave., Cleveland, O.
 Madison Tire & Rubber Co., Buffalo, N. Y.
 Majestic Tire & Rubber Co., Cruse & Daly Sts., Indianapolis, Ind.
 Malay Rubber Co., 1035 Guardian Bldg., Cleveland, O. (See page 864.)
 Malco Tire & Rubber Co., 30th & Chestnut Sts., Philadelphia, Pa.
 Mansfield Tire & Rubber Co., Newman St., Mansfield, O. "Ohio," "United," "American."
 Marathon Tire & Rubber Co., Cuyahoga Falls, O.
 Mark Twain—See Hannibal Rubber Co.
 Martin Tire & Rubber Co., 1656 Broadway, New York, N. Y.
 Mason Tire & Rubber Co., 802 Lake St., Kent, O.
 Master Tire & Rubber Co., Leo St. & E. & O. R. R., Dayton, O.
 Merlin—See Batavia Rubber Co.
 Meyer Rubber Co., Columbiana, O.
 Michelin Tire Co., Milltown, N. J.
 Mid-Continental Tire Mfg. Co., 13th St., Rock Island & Wabash Aves., Wichita, Kans. "Midco."
 Midco—See Zenith Tire & Rubber Co.
 Midco—See Mid-Continental Tire Mfg. Co.
 Middletown Rubber Co., 80-84 Washington St., Middletown, N. Y.
 Midland Tire & Rubber Co., Cambridge Rd., Coshocton, O. "McClurg."
 Mid-West Tire Mfg. Co., Grandview Ave., Arvada, Colo.
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Miller Rubber Co., Akron, O.
 Mohawk Rubber Co., E. Market St., Akron, O.
 Monarch Rubber Co., Hartsville, O.
 Montford Rubber Co., 854 Main St., Buffalo, N. Y. "Wayne."
 Mutual Tire & Rubber Co., 6 E. 39th St., New York, N. Y.
 Na-Peer Tire Co., Akron, O.
 Nassau—See Thermold Rubber Co.
 National Rubber Products Corp., Tenth St. & Columbia Ave., Philadelphia, Pa. "Speedway."
 National Tire Co., Broad St. Bank Bldg., Trenton, N. J.
 National Tire & Rubber Co., East Palestine, O. "Lagonda," "Olympian," "Roamer," "Remington."
 Naugatuck Tire & Rubber Co., 888 Eighth Ave., New York, N. Y. (Dealers.) (See page 873.)
 Nebraska Tire & Rubber Co., 3167-77 Spaulding St., Omaha, Nebr. "Cornhusker."
 Needham Tire Co., Charles River, Mass.
 New England Tire & Rubber Co., 285 High St., Holyoke, Mass. "Holyoke."
 New Jersey Car Spring & Rubber Co., Wayne & Brunswick Sts., Jersey City, N. J. "Car-spring," "Anchor."
 Norwalk Tire & Rubber Co. (Winnipauk), Norwalk, Conn.
 Odell Rubber Co., Ewing Ave. & Vandalia R. R., South Bend, Ind.
 Ohio—See Mansfield Tire & Rubber Co.
 Ohio Guaranty Tire & Rubber Co., 5510 Euclid Ave., Cleveland, O. "Tuscan." (Distributors.) (See page 873.)

Oldfield Tire Co., Akron, O.
 Omar Tire & Rubber Co., 42 W. 39th St., New York, N. Y.
 Olymplan—See National Tire & Rubber Co.
 Orrville Rubber Co., Orrville, O.
 Overland Tire & Rubber Co., 30th & Taylor Sts., Omaha, Nebr.
 Para-Bell—See Columbia Tire & Rubber Co.
 Paramold—See Pharis Tire & Rubber Co.
 Parker Tire & Rubber Co., 2641 Allan Ave., Indianapolis, Ind.
 Paul Rubber Co., Salisbury, S. C.
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Perfection Tire & Rubber Co., Fort Madison, Ia.
 Pharis Tire & Rubber Co., Newark, O. "Paramold." (See page 873.)
 Pointer—See Rufenacht Rubber Co.
 Portage Rubber Co., Barborton, O.
 Portage Tire & Rubber Co., Akron, O. "Skid-lock."
 Porter Rubber Co., Salem, O.
 Powertown Tire Corp., Rochester, N. Y.
 Prudential Tire & Rubber Co., 8 S. Dearborn St., Chicago, Ill.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Quality Tire & Rubber Co., 24th & Walton Sts., Anderson, Ind. "Long-Wear."
 R & C—See Roussey-Centlivre Rubber Co.
 Racine Auto Tire Co., 1215 State St., Racine, Wis. "Horseshoe."
 Racine Rubber Co., Racine, Wis. (See page 867.)
 Ramo Tire & Rubber Co., Standard Life Bldg., Pittsburgh, Pa.
 Record—See National Tire & Rubber Co.
 Remington—See National Tire & Rubber Co.
 Republic Rubber Co., Albert St., Youngstown, Ohio. "Grande."
 Reserve—See Western Reserve Tire Corp.
 Reverse Rubber Co., 1790 Broadway, New York, N. Y.
 Road King—See Ajax Rubber Co.
 Roamer—See National Tire & Rubber Co.
 Rotary Tire & Rubber Co., Zanesville, O. "Rovar."
 Roussey-Centlivre Rubber Co., 129 E. Main St., Fort Wayne, Ind. "R & C."
 Rovar—See Rotary Tire & Rubber Co.
 Rubber Products Co., Fifth & Brady Sts., Barborton, O. "Stronghold."
 Rufenacht Rubber Co., Bucyrus, O. "Crawford," "Pointer."
 Samson Tire & Rubber Corp., 333 W. Pico St., Los Angeles, Cal.
 Santa Fe—See Hawkeye Tire & Rubber Co.
 Savage—See Sprechels-Savage Tire Co.
 Scout—See Ardmore-Akron Tire & Rubber Co.
 Sheridan—See Butler Bros.
 Sherman-Stieverson Tire & Rubber Co., Elks Bldg., Scottsdale, Pa.
 Silvertown—See Goodrich Co.
 Sioux City Tire & Mfg. Co., Fifth & Plymouth Sts., Sioux City, Ia.
 Skidlock—See Portage Tire & Rubber Co.
 Slohm Tire & Mould Co., 247 Delaware Ave., Buffalo, N. Y.
 Smith Rubber & Tire Co., Midland Ave., Garfield, N. J.
 Sound—See Western Rubber Co.
 Southern Tire & Rubber Co., 9 Central Park W., New York, N. Y.
 Speedway—See National Rubber Products Corp.
 Sprague Tire & Rubber Co., 18th & Isard Sts., Omaha, Neb.
 Sprechels-Savage Tire Co., Main & Second Sts., San Diego, Cal. "Savage."
 Stalwart—See Ashland Tire & Rubber Co.

Everything is listed under the NOUN or principal word



THE FISK TIRE LINE

Extra mileage tires in cord and fabric. A special fabric tire, the extra ply, extra-strength Red-Top, for rough roads. High-grade repair stocks and tire sundries of Fisk quality. Truck tires, both solid and pneumatic.—These comprise the Fisk line, which has sustained the Fisk reputation and met price competition successfully. The Fisk dealer franchise increased in value in 1921. The finest relations exist always between us and our dealers.

Branches in the following cities:

Aberdeen, So. Dak.
 Albany, N. Y.
 Allentown, Pa.
 Amarillo, Tex.
 Atlanta, Ga.
 Baltimore, Md.
 Bangor, Me.
 Billings, Mont.
 Binghamton, N. Y.
 Birmingham, Ala.
 Bismarck, No. Dak.
 Boston, Mass.
 Bridgeport, Conn.
 Brooklyn, N. Y.
 Buffalo, N. Y.
 Burlington, Vt.
 Butte, Mont.
 Cedar Rapids, Ia.
 Charlotte, N. C.
 Chattanooga, Tenn.
 Chicago, Ill.
 Chicopee Falls, Mass.
 Cincinnati, O.
 Cleveland, O.
 Columbia, S. C.
 Columbus, O.
 Dallas, Tex.
 Davenport, Ia.
 Dayton, O.
 Denver, Colo.
 Des Moines, Ia.
 Detroit, Mich.
 Duluth, Minn.
 Eau Claire, Wisc.
 Elmira, N. Y.
 El Paso, Tex.
 Erie, Pa.
 Evansville, Ind.
 Fargo, No. Dak.
 Fort Dodge, Ia.
 Fort Wayne, Ind.
 Fresno, Calif.

Galesburg, Ill.
 Grand Rapids, Mich.
 Greenville, S. C.
 Harrisburg, Pa.
 Hartford, Conn.
 Hastings, Nebr.
 Houston, Tex.
 Indianapolis, Ind.
 Jackson, Miss.
 Jacksonville, Fla.
 Kalamazoo, Mich.
 Kansas City, Mo.
 La Crosse, Wisc.
 Lima, O.
 Lincoln, Neb.
 Little Rock, Ark.
 Los Angeles, Cal.
 Louisville, Ky.
 Lowell, Mass.
 Lynn, Mass.
 Madison, Wisc.
 Manchester, N. H.
 Marinette, Wisc.
 Mason City, Ia.
 Memphis, Tenn.
 Milwaukee, Wisc.
 Minneapolis, Minn.
 Minot, No. Dak.
 Muncie, Ind.
 Nashville, Tenn.
 Newark, N. J.
 New Orleans, La.
 New York City.
 Norfolk, Va.
 Oakland, Calif.
 Oklahoma City, Okla.
 Omaha, Nebr.
 Oshkosh, Wisc.
 Peoria, Ill.
 Philadelphia, Pa.
 Phoenix, Ariz.
 Pittsburgh, Pa.

Portland, Me.
 Portland, Ore.
 Providence, R. I.
 Quincy, Ill.
 Raleigh, N. C.
 Rapid City, So. Dak.
 Reading, Pa.
 Reno, Nev.
 Richmond, Va.
 Riverside, Cal.
 Roanoke, Va.
 Rochester, N. Y.
 Sacramento, Cal.
 Saginaw, Mich.
 Salt Lake City, Utah
 San Antonio, Tex.
 San Diego, Calif.
 San Francisco, Cal.
 Scranton, Pa.
 Seattle, Wash.
 Sioux City, Ia.
 Sioux Falls, So. Dak.
 South Bend, Ind.
 Spokane, Wash.
 Springfield, Ill.
 Springfield, Mass.
 St. Joseph, Mo.
 St. Louis, Mo.
 Sweetwater, Tex.
 Syracuse, N. Y.
 Tacoma, Wash.
 Toledo, O.
 Utica, N. Y.
 Waco, Tex.
 Washington, D. C.
 Waterloo, Ia.
 Watertown, N. Y.
 Watertown, So. Dak.
 Wichita, Kans.
 Worcester, Mass.
 Youngstown, O.

Please mention The Automobile Trade Directory

TIRES, Pneumatic (Continued)

Standard Four Tire Co., Keokuk, Ia.
 Standard Tire Co., Willoughby, O. "Tiger-foot."
 Star Rubber Co., 1072 Crozier St., Akron, O. "Comet."
 Stephens Rubber Co., A. J., 1427 Chestnut St., Kansas City, Mo.
 Sterling Tire Corp., Rutherford, N. J.
 Stronghold—See Rubber Products Co.
 Sturdy Tire & Rubber Co., 17-35 Perrine Ave., Trenton, N. J.
 Sturges Tire & Rubber Co., Oakland, Cal. "V. K."
 Superior—See Cord Tire Corp.
 Super Tread Tire Co., Cedar & Emerick Sts., South Bend, Ind.
 Supershod—See Surety Tire & Rubber Co.
 Sure Grip—See Hardman Rubber Corp.
 Surety Tire & Rubber Co., St. Louis, Mo. "Supershod." (See page 872.)
 Swinehart Tire & Rubber Co., North & Howard Sts., Akron, O.
 Syra-Cord—See Syracuse Rubber Co.
 Syracuse Rubber Co., Syracuse, N. Y. "Syra-Cord."
 Terrell Tire & Rubber Co., Clinton, Mo.
 Thermoid Rubber Co., Trenton, N. J. "Nassau." (See page 531.)
 Thorobred—See Dayton Rubber Mfg. Co.
 Tiger-foot—See Standard Tire Co.
 Tollivar Tube & Tire Co., 3100 Downing St., Denver, Colo.
 Top Notch—See Advance Rubber Co.
 Toron—See Hydro-United Tire Co.
 Trautwein Corp., 585-587 Manhattan Ave., Brooklyn, N. Y.
 Traveler Rubber Co. of Bethlehem, Traveler Ave. & Auburn St., Bethlehem, Pa.
 Tred-Wel—See Twin Tube & Rubber Co.
 Triumph Tire & Rubber Co., Manley, Mount & Nelson Sts., Long Island City, N. Y. (Dealers.) (See page 872.)
 Tubeless Tire & Rubber Co., Millersburg, O.
 Tuff-E-Nuff—See Converse Rubber Shoe Co.
 Tuscan—See Ohio Guaranty Tire & Rubber Co.
 Tuscan Tire & Rubber Co., Carrollton, O. "Buckskin."
 Twin Tube & Rubber Co., 1002 S. Michigan Ave., Chicago, Ill. "Tred-Wel."
 Tyr Rubber Co., Andover, Mass. "Tyrian."
 Tyrian—See Tyr Rubber Co.
 U. & G.—See United & Globe Rubber Co.
 United—See Mansfield Tire & Rubber Co.
 United Motors Service, Grand Blvd. at Cass, Detroit, Mich. "Formost."
 United Rubber Co., Akron, O. "Huskie."
 United States Tire Co., 1790 Broadway, New York, N. Y. (See page 863.)
 United & Globe Rubber Co., Prospect & Frasier Sts., Trenton, N. J. "U. & G."
 Universal Rubber Products Co., Zellenople, Pa. "Zest."
 V. K.—See Sturges Tire & Rubber Co.
 Victor Rubber Co., Springfield, O. (See page 872.)
 Victory—See Dry Climate Tire Mfg. Co.
 Victory Tire & Rubber Co., 258 N. Broad St., Philadelphia, Pa. "Girard."
 Viking—See Combination Rubber Mfg. Co.
 Virginian Rubber Co., Union Trust Bldg., Charleston, W. Va.
 Vitalic—See Continental Rubber Works.
 Vulcan Rubber Co., Erie, Pa.
 Vulcaweld Rubber Co., Pottstown, Pa.
 Warner Tire & Rubber Co., Warner Rd., Cleveland, O.
 Warwick—See Washington Rubber Co.

Washington Rubber Co., Washington, Pa. "Warwick."
 Wayne—See Montford Rubber Co.
 Western Reserve Tire Corp., Cleveland, O. "Reserve."
 Western Rubber Co., 6200 S. Union Ave., Tacoma, Wash. "Sound."
 Wilson Tire & Rubber Co., Harvard Park, Springfield, Ill.
 Wiregrip—See Lancaster Tire & Rubber Co.
 Woods Tire & Rubber Co., 25th Ave. & 14th St., Gulfport, Miss.
 World Puncture Proof Tire Co., Ridge Bldg., Kansas City, Mo.
 Wyoming Tire & Rubber Co., 814-16 Coal Exchange Bldg., Wilkes-Barre, Pa.
 X-L—See Excel Rubber Co.
 Yale Tire & Rubber Co., 1003 Dixwell Ave., New Haven, Conn.
 Zeglen Tire & Rubber Co., 1346 Rawson St., Chicago, Ill. "Edison."
 Zenith Tire & Rubber Co., Leader-News Bldg., Cleveland, O. "Mldco."
 Zest—See Universal Rubber Products Co.

TIRES, Solid

American Rubber & Tire Co., 100 Beach St., Akron, O.
 Batavia Rubber Co., Batavia, N. Y.
 Bergougnan Rubber Corp., 2000 E. State St., Trenton, N. J.
 Brunswick-Balke-Collender Co., 623-33 S. Wabash Ave., Chicago, Ill.
 Buckeye Rubber Products Co. (Polack Solid Tyre Division), Willoughby, O. "Polack." (See page 875.)
 Bucyrus—See Henderson Tire & Rubber Co.
 Canton-Blackstone Co., Canton, O.
 Dunlop Tire & Rubber Corp. of America, Buffalo, N. Y. (See page 873.)
 Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.
 Gibley Tire & Rubber Co., Conshohocken, Pa.
 Goodyear Tire & Rubber Co., Akron, O.
 Henderson Tire & Rubber Co., 40 Exchange Pl., New York, N. Y. "Bucyrus."
 Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
 Hood Rubber Products Co., Bigelow Ave., Watertown, Mass.
 Johnstone Tire & Rubber Co., La Porte, Ind.
 Kelly-Springfield Tire Co., 1710 Broadway, New York, N. Y.
 Latex Tire & Rubber Co., E. Scott St., Fond du Lac, Wis.
 McGraw Tire & Rubber Co., 4810 Prospect Ave., Cleveland, O.
 Mason Tire & Rubber Co., 802 Lake St., Kent, O.
 Milford Rubber Works, Milford, Ill.
 Mono-Twin—See United States Tire Co.
 Mutual Tire & Rubber Co., 6 E. 39th St., New York, N. Y.
 Owen Tire & Rubber Co., 2336 Euclid Ave., Cleveland, O.
 Polack—See Buckeye Rubber Products Co.
 Republic Rubber Co., Albert St., Youngstown, Ohio.
 Rimco—See Rubber Insulated Metals Corp.
 Rubber Insulated Metals Corp., 901 North Ave., Plainfield, N. J. "Rimco."
 Swinehart Tire & Rubber Co., North & Howard Sts., Akron, O.
 United States Tire Co., 1790 Broadway, New York, N. Y. "Mono-Twin." (See page 863.)
 Victor Rubber Co., Springfield, O. (See page 872.)

Everything is listed under the NOUN or principal word



The **AJAX CORD** *With New Features*

In setting this new standard in cord tire values, Ajax has scored two notable achievements.

- 1—Ajax has brought to the tire user and the tire dealer, a degree of satisfaction never attained before.
- 2—Ajax has fulfilled the prediction, often made in the trade, that the ultimate first choice cord tire would bear the Ajax name.

These twin accomplishments mean just this—the *Ajax Dealer's Franchise is a more valuable asset than ever.*

Good dealers are invited to write for further details.

AJAX RUBBER COMPANY, INC., 220 West 57th Street, New York City

AJAX TIRES

Please mention The Automobile Trade Directory



We are makers of both Cord and Fabric **SUPERSHOD** Tires.

These Tires are of the very best quality that can be made—

They are **SUPERSHOD**—wear longer—give better service.

We also manufacture **Surety** (red) and **Axiom** (gray) Pneumatic inner tubes.

We fully protect our dealers, and all our products are made and sold upon this one proposition:

**"Necessity may raise the price;
Nothing shall lower the quality"**

SURETY TIRE & RUBBER CO.
ST. LOUIS, U. S. A.

TRIUMPH TIRES



Built as well as science, skill and experience can produce. The lowest-cost-per-mile tires known—guaranteed

**6000
Miles**

and Invariably
Delivering More

Triumph Tire & Rubber Co.
Manley, Mount & Nelson Sts. Long Island City, N. Y.

**"THEY'RE MAKING
TIRE HISTORY"**



OVERSIZE
CORD AND FABRIC TIRES

Write or wire today for our broad-gauged, liberal selling franchise for dealers and distributors—It's a winner!

BLEKRE TIRE & RUBBER CO.
ST. PAUL, MINN.



TO BUILD GOOD BUSINESS

For substantial, permanent, good business, there can never be a substitute for high quality.

High grade tires, fair list prices, liberal discounts and efficient distribution combine to make the Victor sales proposition suited to the requirements of good dealers.

Write for it today

THE VICTOR RUBBER COMPANY
Springfield, Ohio
Builders of Rubber Tires for 22 Years

Victor Tires
CORD & FABRIC TIRES—RED & GRAY TUBES

Please mention The Automobile Trade Directory

OUR TIRES**MADE and SOLD**

represent an investment by the public of

MILLIONS
in
THOUSANDS
of
TIRES

This shows the
UNIVERSAL
APPRECIATION

of
OUR TIRE
and it should convince you of its
SUPREME
MERIT.

The sale of one of our tires to your customer compels his permanent patronage.

Write for Dealers' Proposition.
Your Opportunity for Sales and Profit.

The Pharis Tire & Rubber Co.
Newark, Ohio

Factory Seconds**First Quality**

TIRES and TUBES

*Dealers Write for Quotations
Advertised Reliable Makes
Large or Small Quantities
Shipped C. O. D. or SD/BL.*

**NAUGATUCK TIRE &
RUBBER COMPANY**
INCORPORATED

888 Eighth Ave.

New York City

Special Announcement

We have succeeded in obtaining a factory in which we will build our own tire in both **FABRIC** and **CORD** of a quality to equal any now on the market.

Pending the completion of our own **NEW EQUIPMENT** we are temporarily distributing

TUSCAN TIRES

FABRIC **HAND BUILT** **CORD**
6000 miles 8000 miles

**Exceptional Sales Offer for
Distributors**

Our policy of territorial **PROTECTION**, **PRICES** and **DISCOUNTS** will mean **BIG PROFITS** for you.

WRITE OR WIRE

Some valuable territory is still open

**The Ohio Guaranty Tire and
Rubber Co.**

5510 Euclid Avenue

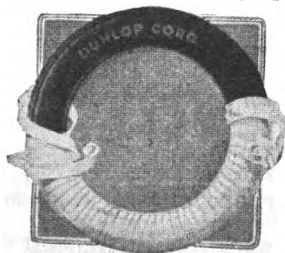
Cleveland, Ohio

THE exacting quality that must be built into a product bearing the name of **DUNLOP**, explains the confidence held by all those who buy, sell or use Dunlop Tires.

Dunlop Tire and Rubber Corp.
of America

Buffalo

New York

**DUNLOP**

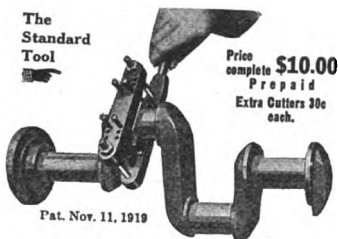
Please mention The Automobile Trade Directory

TIRES, Special*(Cushion, Sectional, Wood, Spring, etc.)***Automobile Spring Wheel Co.**, 413 W. Broadway, New York, N. Y. "Sipe."**Brophy**—See **Pneumatic Cushion Inner Tube Co.****Burgess Patent Tire & Mfg. Co.**, 19th & Campbell Sts., Kansas City, Mo.**Compression Inner Tube Co.**, Rome, Ga.**Dayton Rubber Mfg. Co.**, W. River St., Dayton, O. "Thorobred."**Edwards Rubber Co.**, Peoples Saving Bank Bldg., Akron, O.**Goodyear Tire & Rubber Co.**, Akron, O. "Motz."**Lambert Tire & Rubber Co.**, Akron, O. "Trublpruf."**Lee Tire & Rubber Co.**, 245 W. 55th St., New York, N. Y.**Liberty Airless Tire Corp.**, Carey, O.**Mollitor Tire Co.**, 4241 Irving Park, Blvd., Chicago, Ill.**Motz**—See **Goodyear Tire & Rubber Co.****National Wheel Co.**, Wausau, Wis.**Pneumatic-Cushion Inner Tube Co.**, 1 Appleton St., Boston, Mass. "Brophy."**Rubber Insulated Metals Corp.**, Plainfield, N. J.**Sipe**—See **Automobile Spring Wheel Co.****Thorobred**—See **Dayton Rubber Mfg. Co.****Triple Airless Tire Co.**, Manorville, Pa.**Trublpruf**—See **Lambert Tire & Rubber Co.****Weltung Steel Tire Co.**, 5 Columbus Circle, New York, N. Y.**TIRES, SPRING**—See **Tires, Special**; also **Wheels, Special****TOILET CASES**—See **Cases, Toilet****TONGS, Engine Lift for Fords****Apex Mfg. Co.**, Elizabeth, N. J.**TONGS, TERMINAL**—See **Tools, Storage Battery Repair****TONNEAU SHIELDS**—See **Shields, Tonneau****TOOL BAGS**—See **Bags, Tool****TOOL BOX LOCKS**—See **Locks, Cabinet and Pad**; also **Catches, Spring****TOOL BOXES**—See **Boxes, Tool****TOOL CHECKS**—See **Checks, Brass Time, Tool and Pay****TOOL DESIGNERS**—See **Designers, Special Machinery and Tool****TOOL EXTENSION HANDLES**—See **Handles, Extension Tool****TOOL GRINDERS**—See **Grinders****TOOL HOLDERS**—See **Holders, Lathe and Planer Tool****TOOL KITS**—See **Kits, Tool****TOOL POST GRINDERS**—See **Drills, Electric Portable****TOOL RACKS**—See **Racks, Metal Tool****TOOL ROLLS**—See **Bags, Tool****TOOLS, Spring Eye Forming****Kitowski Mfg. Co.**, St. Cloud, Minn.**TOOL STEEL**—See **Steel****TOOLS, AIR RELEASING**—See **Tools, Tire Deflating****TOOLS, BATTERY REPAIR**—See **Tools, Storage Battery Repair****TOOLS, BATTERY TERMINAL CLEANING**—See **Tools, Storage Battery Terminal Cleaning****TOOLS, BEARING PARTING FOR FORDS**—See **Tools, Cam-Shaft Bearing Parting****TOOLS, BEARING PULLING**—See **Pullers, Bearing****TOOLS, BORING**—See **Bars, Boring****TOOLS, Cam-Shaft Bearing Parting, for Fords****American**—See **Service Station Equipment Co.**
Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."**TOOLS, CHAIN ATTACHING**—See **Tools, Tire Chain Attaching****TOOLS, Chain Repair***(Tools or clamps for drawing together the ends of broken driving chains to facilitate making repairs. For Tire Chain Repair Tools—See Tools, Tire Chain, Repair.)***Bean**—See **Liberty Metal Products Co.****Brown & Son, J. C.**, Butler, Ind.**Caldwell Tool Mfg. Co.**, 87 Warren St., New York, N. Y.**Central Flatiron Mfg. Co.**, Grand Ave., Johnson City, N. Y. "Duo-Point."**Duo-Point**—See **Central Flatiron Mfg. Co.****Handee**—See **Racine Handy Mfg. Co.****Harris & Reed Mfg. Co.**, 1510-23 W. 15th St., Chicago, Ill.**Liberty Metal Products Co.**, Front St. & First Ave., Berea, O. "Bean."**Macdonald & Co.**, J. N., 194 Main St., Wethersfield, Conn. "Necessity."**Meyer, Henry T. C.**, 203 Helen Ave., Detroit, Mich.**Necessity**—See **Macdonald & Co.****Racine Handy Mfg. Co.**, 107 Fifth St., Racine, Wis. "Handee."**TOOLS, COTTER PIN**—See **Pullers, Cotter Pin****TOOLS, Crank Pin Trueing***(For Crankshaft Grinding Machines—See Grinders, Crank Pin.)***Atherton-Salter Mfg. Co.**, 2623 N. 22nd St., St. Louis, Mo. "Shafttru."**Atlas Mfg. Co.**, Dept. D., Millvale Station, Pittsburgh, Pa. (See page 875.)**Dixie**—See **Southern Machine & Tool Co.****Emco Mfg. Co.**, Binghamton, N. Y. "Taber."
G. B. Garage & Mfg. Co., 299 Franklin St., Hempstead, N. Y.**Ha Lee**—See **Lee Tool & Mfg. Co.****Kraeuter & Co.**, Newark, N. J.**Kreiger Tool & Mfg. Co.**, Wisconsin Rapids, Wis.

Everything is listed under the NOUN or principal word

Atlas Garage Tools

The
Standard
Tool



Price
complete \$10.00
Prepaid
Extra Cutters 30c
each.

Pat. Nov. 11, 1919

- Crankshaft Grinder (Standard) \$10.00
For Crankpins 1 1/2 to 2 1/2 in. diam.
Crankshaft Grinder (for Fords) 5.00
Crankshaft Grinder (Large) 25.00
For Crankpins 2 to 4 in. diam.
Wheel Puller, 2 sizes \$6.50 and 12.50
Adjustable 20 ton Press 37.50
Garage Unit 85.00
Bearing Compound 1.00

Send for Free Sample of Compound
Catalog and Terms on Request

ATLAS MANUFACTURING CO.
Millvale Station (Dept. D) Pittsburgh, Pa.



Adjustable Crank Pin Tool

A precision tool of scientific accuracy, strength and simplicity. Will not chatter. Built of the finest materials and with a blued finish. Warranted to give satisfaction.

Trues up crank pins to smooth and perfect round, no matter how badly out of shape they may be. Takes off as little or as much as desired. Simple to operate because there is only one adjustment to make. Average time per bearing 5 to 10 minutes. Can be used under the car, eliminating necessity of tearing down motor to remove shaft.

Blades of alloy tool steel. Four blade lengths supplied with each tool so full width of bearing may be cut. Cutting blade always on crank pin center radially opposite hardened steel back plate.

Send for descriptive circular giving full details
Two Sizes:

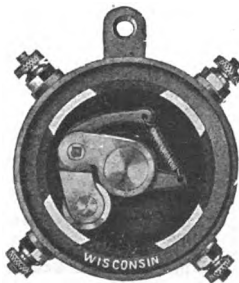
- 1" to 2" \$40
2" to 3" \$45

Correspondence invited from Jobbers
THE H. A. LEE TOOL & MFG. CO.
KANSAS CITY, MO.



A FORD NECESSITY

Wisconsin
TIMER



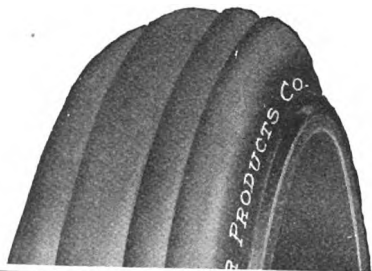
THE MOST PROFITABLE SELLER

Because They are Built Right
They are Priced Right

THEY HAVE PROVEN SATISFACTION

Write for Complete Information

Wisconsin Timer Mfg. Corp.
Menomonee Falls, Wis.



POLACK TRUCK TYRES

INCREASED production of Polack Solid Tyres enables us to offer additional dealer franchises and undertake truck manufacturers' equipment contracts.

Polack Tyres are adjusted on a 10,000 mile basis—and a record of 22 years shows they do deliver the mileage.

The Buckeye Rubber Products Co.
Polack Solid Tyre Division
WILLOUGHBY, OHIO

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TOOLS, Crank Pin Truing (Cont'd)

- Lee Tool & Mfg. Co.,** H. A., Kansas City, Mo. "Ha Lee." (See page 875.)
- Murrie-Ott Co.,** La Crosse, Wis.
- Peters, Inc.,** Widener Bldg., Philadelphia, Pa. (See page 695.)
- Railway Specialty Co.,** Atchison, Kans. "Rysco."
- Rysco—See Railway Specialty Co.**
- Sawyer-Weber Tool Mfg. Co.,** 340 S. Alameda St., Los Angeles, Cal. "Weber." (See page 877.)
- Shaftru—See Atherton-Salter Mfg. Co.**
- Shaw Mfg. Co.,** Fred, 116-18 South Boulder, Tulsa, Okla. "Sutter's."
- Southern Machine & Tool Co.,** 3210 Locust St., St. Louis, Mo. "Dixie." (See page 879.)
- Sutter's—See Shaw Mfg. Co.**
- Taber—See Emco Mfg. Co.**
- Weber—See Sawyer-Weber Tool Mfg. Co.**

TOOLS, CRANKSHAFT GRINDING—See Tools, Crank Pin Truing**TOOLS, Cylinder Lapping**

- Clover Mfg. Co.,** 410 Main St., Norwalk, Conn. (See page 281.)

TOOLS, CYLINDER REBORING — See Tools, Portable Cylinder Reboring**TOOLS, Demountable Rim Contracting**

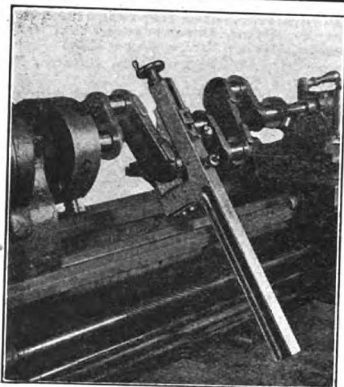
(Tools or Clamps for contracting or expanding split demountable rims to facilitate the changing of tires)

- Abbe, E. W.,** 19 Curtis St., New Britain, Conn.
- Accurate Machine Mfg. Co.,** 234 Fifth Ave., S., Minneapolis, Minn.
- B. & B.—See Bjornlie Mfg. Co.**
- Bjornlie Mfg. Co.,** 129 N. Broadway, Watertown, S. Dak. "B. & B."
- Brown Co.,** 31 Bradford St., Albany, N. Y. "Brownie."
- Brownie—See Brown Co.**
- Burd High Compression Ring Co.,** Rockford, Ill. (See pages 715 and 727.)
- C. S.—See Canton Specialty Co.**
- Canton Specialty Co.,** Canton, Ill. "C. S."
- Case—See Handy Mfg. Co.**
- Davenport Mfg. Co.,** E. State St., Davenport, Iowa.
- Duplex Rim Device Co.—See Zinke Co.**
- Essandee Corp.,** 330 W. 16th St., Los Angeles, Cal.
- Eureka Rim Compressor Co.,** Addison, N. Y.
- Federal Corp.,** Westfield, Mass.
- Fish-Best Co.,** 37 S. Wabash Ave., Chicago, Ill.
- Friedstedt Mfg. Co.,** 2934-38 W. Lake St., Chicago, Ill.
- Giant—See Park Metalware Co.**
- Greb Co.,** 195 State St., Boston, Mass. (See page 667.)
- Haines, W. B.,** 409-11 Market St., Sunbury, Pa. "U. S."
- Handy Mfg. Co.,** Atlas Bank Bldg., Cincinnati, O. "Case."
- Heitmiller & Sons, C. C.,** 5619 22nd Ave., N.W., Seattle, Wash.
- Hercules Rim Tool Co.,** 115 Commercial St., Los Angeles, Cal.
- Holmes, George L.,** 1776 Broadway, New York, N. Y. (Eastern Distributors for Greb Tools.) (See page 179.)
- Hughes Motor Co.,** John P., Lynchburg, Va. "Red Giant."
- J. B.—See Patented Products Co.**
- Jackson—See National Safety Car & Equipment Co.**
- Jamcap Rim Tool Co.,** 68 Harrison Ave., Boston, Mass.
- Jonas, C. N. & F. W.,** 608 S. Dearborn St., Chicago, Ill. (Sales Distributors East of the Mississippi River for Standley Adjusters.) (See page 138 B.)
- K. P. Products Co.,** 250 W. 54th St., New York, N. Y.
- Kap Mfg. Co.,** 281 Natoma St., San Francisco, Cal.
- Kompact Devices Co.,** 208 Warren St., Needham, Mass.
- Lawco—See Lawson Co.**
- Lawson Co.,** F. H., Dept. D, Cincinnati, O. "Lawco." (See page 377.)
- Lewsen Mfg. Co.,** Portland, Me.
- Little Giant—See Marquette Mfg. Co.**
- MAC—See MacLennan, J. A.**
- MacLennan, J. A.,** Chadds Ford, Pa. "MAC."
- Marquette Mfg. Co.,** 7218 S. Wabasha St., St. Paul, Minn. "Little Giant."
- Metal Products Mfg. Co.,** 121-29 Fifth Ave., S., Minneapolis, Minn. "Thiem."
- Miller Bros.,** First National Bank Bldg., Chicago, Ill. "Minute."
- Milwaukee Pattern & Mfg. Co.,** 1195-99 30th St., Milwaukee, Wis.
- Minute—See Miller Bros.**
- National Safety Car & Equipment Co.,** 202 Theresa Ave., St. Louis, Mo. "Jackson."
- Pacific Rim Tool Sales Co.,** 2339 11th Ave. N., Seattle, Wash.
- Park Metalware Co.,** Lewis Bldg., Buffalo, N. Y. "Xcelstor," "Giant."
- Patented Products Co.,** 1938 Calumet Ave., Detroit, Mich. "J. B."
- Presto—See Shelby Tool Co.**
- Quick & Easy—See Wheel & Rim Works Corp.**
- Record Accessories Corp.,** 23-31 W. 43rd St., New York, N. Y.
- Red Giant—See Hughes Motor Co.**
- Safstroms—See Zinke Co.**
- Schultze Machine Shop, Green & Lincoln Sts.,** Chicago, Ill.
- Schurman Auto Rim Removing Co.,** 5129 Penn Ave., Pittsburgh, Pa.
- Shelby Tool Co.,** Shelby, Mich. "Presto."
- Simplex Steel Stamping Co.,** 1926-28 Gravois Ave., St. Louis, Mo.
- Standley Skid Chain Co.,** Boone, Ia. (See page 138 B.)
- Stanweld—See Standard Parts Co.**
- Thiem—See Metal Products Mfg. Co.**
- Trex—See Trexler Co.**
- Trexler Co.,** 1418 Walnut St., Philadelphia, Pa. "Trex." (See page 467.)
- U. S.—See Haines, W. B.**
- Weiser's E. Z. Rim Tool Co.,** 433-35 High St., Hamilton, O.
- Wheel & Rim Works Corp.,** 110 S. Dearborn St., Chicago, Ill. "Quick & Easy."
- Wonder Products Co.,** South Norwalk, Conn.
- Xcelstor—See Park Metalware Co.**
- Zinke Co.,** 1323-25 Michigan Ave., Chicago, Ill. (Sole Distributors for Duplex Rim Device Co., Chicago, Ill.)

TOOLS, Fender Straightening

- Stiles Mfg. Co.,** St. Louis, Mo. (See page 471.)

Everything is listed under the NOUN or principal word

No JigsNo FilingNo Offsetting

Weber Crank-Pin Re-Turning Tool



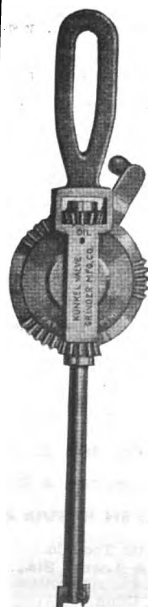
This tool is so constructed that the pins are turned **ROUND** and **PARALLEL** to the main bearings.

We guarantee that it will re-turn a Crank-Pin within as close limits of accuracy as any other known method. There is no faster method known.

Used and recommended by several leading manufacturers—names furnished on request.

At Your Jobbers or Write Direct

SAWYER-WEBER TOOL MFG. CO.
346 South Alameda Street
Los Angeles, Cal.



Save Time Energy, Money

Use the Kunkel Valve Grinder. Works six times as fast as hand-grinding, with half the labor. Belongs in every mechanic's kit.

USE THE KUNKEL VALVE GRINDER

Rotating the handle oscillates the bit, six oscillations to each turn. Heavy enough to supply part of the pressure necessary, light enough to be easily handled. Reaches Ford's last valve without disassembly. Bronze grip, machine-cut gears, long bearings, interchangeable bits. Spring supplied to lift valves while grinding. Price \$5.00 at factory.

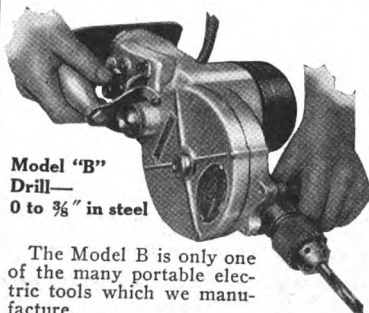
Made by

**Kunkel Valve
Grinder Mfg. Co.**
HART MICHIGAN

TEMCO

Trade Mark

Portable Electric Tools



Model "B"
Drill—
0 to $\frac{3}{8}$ " in steel

The Model B is only one of the many portable electric tools which we manufacture.

Our line is especially suitable for garage and repair shop work, consisting of all sizes of Drills and Bench, Pedestal and Tool Post Grinders.

Write for complete catalog and price list.

The Temco Electric Motor Co.
25 Sugar St.
Leipsic, Ohio

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TOOLS, GENERATOR, BRUSH SANDING FOR FORDS—See Sanders, Generator Brush

TOOLS, Lathe and Planer

(See also Holders, Lathe and Planer Tool)

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Carr—See Thompson & Son Co.

Gisholt Machine Co., 1315 E. Washington Ave., Madison, Wis.

Haynes Stellite Co., 30 E. 42d St., New York, N. Y. "Stellite."

Johnson—See Pratt & Whitney Co.

Marcy Tool Works, Putnam, Conn.

Milwaukee Tool & Forge Co., 220 Becher St., Milwaukee, Wis.

O. K. Tool Holder Co., Shelton, Conn.

Pratt & Whitney Co., 111 Broadway, New York, N. Y. "Johnson," "Rhodes," "Woodbridge."

Rhodes—See Pratt & Whitney Co.

Smith Tool & Mfg. Co., R. G., 245-47 N. J. R. R. Ave., Newark, N. J.

Stellite—See Haynes Stellite Co.

Stortz & Son, John, 210-12 Vine St., Philadelphia, Pa.

Thompson & Son Co., Henry G., 277 Chapel St., New Haven, Conn. "Carr."

Union Tool Co., 48 E. River St., Orange, Mass.

Woodbridge—See Pratt & Whitney Co.

TOOLS, MAIN BEARING REAMING FOR FORDS—See Reamers, Main Bearing and Connecting Rod

TOOLS, Piston Ring Compressing

(To facilitate the entering of piston and ring into cylinder)

Cady—See Waglew Mfg. Co.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo. (See page 725.)

Genett & Longyear, Longyear Bldg., Marquette, Mich.

Johnson Specialty Co., 616 E. Washington Ave., Madison, Wis.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for Victory Ring Compressor Co., Grand Rapids, Mich.) (See page 135.)

Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)

Perfection Mfg. Co., Hagerstown, Md.

Tip-Top—See Tipton Mfg. Co.

Tipton Mfg. Co., Tipton, Iowa. "Tip Top." (See page 153.)

Victory Ring Compressor Co.—See Jonas, C. N. & F. W.

Waglew Mfg. Co., 700-02 Manlius St., Syracuse, N. Y. "Cady."

TOOLS, Piston Ring Compressing, for Fords.

(To facilitate the entering of piston and ring into cylinder)

Duplex Rim Device Co.—See Zinke Co.

Fore Electrical Mfg. Co., 5255 N. Market St., St. Louis, Mo. (See page 725.)

Genett & Longyear, Longyear Bldg., Marquette, Mich.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Victory Ring Compressor Co., Grand Rapids, Mich.) (See page 135.)

Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Tip-Top—See Tipton Mfg. Co.

Tipton Mfg. Co., Tipton, Iowa. "Tip Top." (See page 153.)

Victory Ring Compressor Co.—See Jonas, C. N. & F. W.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sole Distributors for Duplex Rim Device Co., Chicago, Ill.)

TOOLS, Piston Ring Groove Cleaning

Lawson, G. D., Pocahontas, Ia.

Rebco—See Reus Mfg. Co.

Reus Mfg. Co., 150 W. Mt. Royal Ave., Baltimore, Md. "Rebco."

TOOLS, Piston Ring Removing

(Special pliers or tongs for removing rings from pistons)

Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.

B & B Motor Specialties Co., 607 N. 13th St., Philadelphia, Pa.

Cloud Accessories Corp., 1408 S. Wabash Ave., Chicago, Ill.

Ensworth, Nell C., Warren, Pa.

Genett & Longyear, Longyear Bldg., Marquette, Mich.

Hartenstein, R. P., 542 S. Dearborn St., Chicago, Ill. "Utility."

Johnson Specialty Co., 616 E. Washington Ave., Madison, Wis.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representative for W. S. Rush & Co., Los Angeles, Cal.)

Munger—See Splitdorf Electrical Co.

Nu Pep Mfg. Co., 2744 N. Natoma Ave., Chicago, Ill.

Rush & Co.—See Jonas, C. N. & F. W.

Splitdorf Electrical Co., 98 Warren St., Newark, N. J. "Munger."

Tip-Top—See Tipton Mfg. Co.

Tipton Mfg. Co., Tipton, Iowa. "Tip Top." (See page 153.)

"Utility"—See Hartenstein, R. P.

Wilhelm-Smith Machine Co., 144 Rose St., Reading, Pa.

TOOLS, PLANER—See Tools, Lathe and Planer

TOOLS, Pneumatic

Chicago Pneumatic Tool Co., 6 E. 44th St., New York, N. Y.

Cleveland Pneumatic Tool Co., 3844 E. 75th St., Cleveland, O.

Cochran Pipe Wrench Mfg. Co., 78th & Kimbark Sts., Chicago, Ill.

Dayton Pneumatic Tool Co., 314 E. Fifth St., Dayton, O. "Green."

Green—See Dayton Pneumatic Tool Co.

Helwig Mfg. Co., Seventh & Locust Sts., St. Paul, Minn.

Hergi Mfg. Co., Bridgeport, Conn.

Independent Pneumatic Tool Co., Chicago, Ill. "Thor."

Everything is listed under the NOUN or principal word

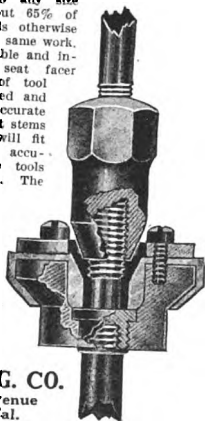
The

HOERNER**ADJUSTABLE VALVE
SEAT FACING TOOL****Does the Work of Ten**

This device will outlast any valve seat facer on the market. Is instantly adjustable to any size valve and saves about 65% of cost of the ten tools otherwise required for doing the same work. It is the only adjustable and interchangeable valve seat facer made. Jaws made of tool steel, properly hardened and are as strong and accurate as a solid facer. Pilot stems interchangeable and will fit any size valve stem accurately. Ten separate tools would cost you \$30.00. The Hoerner ten-in-one costs \$12.00 and will do more and better work besides being adjustable to "off" sizes.

Patented August 10, 1920. All infringements on this patent will be prosecuted.

HOERNER MFG. CO.
3929 Moneta Avenue
Los Angeles, Cal.

**Distributors Wanted****For The Dixie Line of Tools****A Strong Line of Service Tools
On a Worth-While Selling Basis**

Valve Seating Tool
Valve Facing Tool
Valve Tool Set
Holdfast Screw Driver
Adjustable Piston Vise
Autoshaft Miller
Pin Tool

FOR
FORDS

Offset Wrench
Transmission Wrench
Motor Block Support

Send for Our Proposition

Southern Machine and Tool Co.
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**The Latest
in Cylinder
Reboring
Tools****Tools that
Earn
Money and
Good Will**

CABLE ADDRESS
**Van Dresser Cylinder
Reboring Tools** are
manufactured in two
portable models — the
hand and drill-press op-
erated tool and the motor-driven
tool.

The feed on all models is made constant by means of a hardened rack cut integral with the feed bar, and by hardened gears so arranged that the boring head can be instantly pulled up to the starting point or dropped through the bottom of the cylinder.

**A Complete Machine
in Itself**

The electrically driven tool is a complete machine in itself. Simply set it up, turn on the current and forget about it. It will take care of itself.

Friction drive between motor and tool makes burning out of the motor impossible. The final drive is by means of a hardened worm and bronze worm wheel running in oil—and without disconnecting a thing the tool can be driven by hand or drill press, the same as the hand-operated tool.

*For further particulars write your
jobber or direct*

**International Purchasing &
Engineering Co.**
506 McKerchey Bldg. DETROIT, MICH.

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TOOLS, Pneumatic (Continued)

Ingersoll-Rand Co., 11 Broadway, New York, N. Y. "Little David."
 Keller Pneumatic Tool Co., Grand Haven, Mich.
 Little David—See Ingersoll-Rand Co.
 Oldham & Son Co., George, 4316-22 Lackawanna St., Philadelphia, Pa.
 Thor—See Independent Pneumatic Tool Co.
 Titan Automatic Tool Co., 25 W. Broadway, New York, N. Y.
 Turbine Air Tool Co., 710 Huron Rd., Cleveland, O.

TOOLS, Portable Cylinder Reboring

(See also *Machines, Cylinder Reboring; also Bars Boring*)

Dunn Co., J. E., 299 Franklin St., Hempstead, N. Y.
 G. B. Garage & Mfg. Co., 299 Franklin St., Hempstead, N. Y.
 Hubaco—See Hughson-Bacon Co.
 Hughson-Bacon Co., 11th at Market, San Francisco, Cal. "Hubaco." (See page 881.)
 International Purchasing & Engineering Co., 506 McKerehey Bldg., Detroit, Mich. (Sole Distributors for Van Dresser Bros. Co., Detroit, Mich.) (See page 879.)
 Storm Mfg. Co., Minneapolis, Minn.
 Taylor, H. D., Detroit, Mich.
 Universal Tool Co., Garwood, N. J. "Utco." (See page 433.)
 Utco—See Universal Tool Co.
 Winterknight Equipment Co., Philadelphia, Pa. "York." (See page 357.)
 York—See Winterknight Equipment Co.

TOOLS, Portable Cylinder Reboring, for Fords

Champion Mfg. Co., 2908-10 W. Fletcher St., Philadelphia, Pa.
 Davis—See Hincley Machine Works.
 Detroit Garage Equipment Co., 38 Hendrie St., Detroit, Mich.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo. (Pages 491 to 494.)
 Goruse Co., Elmira, N. Y.
 Heiser's Special Tool Co., 2001 Washington St., Kansas City, Mo.
 Hempy-Cooper Mfg. Co.—See Fairbanks Co.
 Hincley Machine Works, E. Lincoln Ave., Hincley, Ill. "Davis."
 Hincley-Myers Co., Water St., Jackson, Mich.
 Hubaco—See Hughson-Bacon Co.
 Hughson-Bacon Co., 11th at Market, San Francisco, Cal. "Hubaco." (See page 881.)
 Phoenix Mfg. Co., North Side, Eau Claire, Wis.
 Storm Mfg. Co., Minneapolis, Minn.
 Universal Tool Co., Garwood, N. J. "Utco." (See page 433.)
 Utco—See Universal Tool Co.
 Winterknight Equipment Co., Philadelphia, Pa. "York." (See page 357.)
 York—See Winterknight Equipment Co.

TOOLS, Radiator Fin Straightening for Fords

Bonney Forge & Tool Works, Allentown, Pa.

TOOLS, RESEATING—See Tools, Valve Re-seating

TOOLS, RIM CONTRACTING—See Tools, Demountable Rim Contracting

TOOLS, Rim Straightening

Victor Vulcanizer Mfg. Co., 1929 O'Fallon St., St. Louis, Mo.

TOOLS, RING REMOVING—See Tools, Piston Ring

TOOLS, SCRAPING—See Scrapers

TOOLS, Spring Leaf Separating

(For separating the spring leaves so they may be lubricated; for Spring Leaf Cups—See Cups and Covers, Spring Leaf Lubricating; for Spring Leaf Lubricating Strips—See Strips, Spring Leaf Lubricating)

Buckeye—See Central Brass & Fixture Co.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."
 Cincinnati Tool Co., Main Ave., Norwood, O.
 Cochran—See Larco Wrench & Mfg. Corp.
 Jimmy—See Thomas-Armstrong Co.
 Knowlsons—See Spring Leaf Lubricator Co.
 Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill. "Cochran."
 O.K.—See West Haven Mfg. Co.
 Onan, David W., 1323 Penn Ave., N., Minneapolis, Minn.
 Spring Leaf Lubricator Co., 1119 Packard St., Ann Arbor, Mich. "Knowlsons."
 Standard Engineering Works, 59 Social St., Woonsocket, R. I.
 Thomas-Armstrong Co., Geneva, N. Y. "Jimmy."
 Tomahawk Mfg Co., 1826 Mannering Rd. S. E., Cleveland, O.
 Vols, F. W., 2914 Grant Rd., Washington, D. C.
 Weise, A. F., 133 W. Washington St., Chicago, Ill.
 West Haven Mfg. Co., 22 Elm St. (West Haven), New Haven, Conn. "O.K."
 Winther & Sons, C. W., Fresno, Cal.

TOOLS, SPRING LUBRICATING—See Tools, Spring Leaf Separating

TOOLS, Storage Battery Repair

American Bureau of Engineering, 1609 S. Michigan Ave., Chicago, Ill. (See page 147.)
 Auto Electric Sales Co., 2933 Hennepin Ave., Minneapolis, Minn. "Weiman."
 Battery Equipment & Supply Co., 1458 Michigan Ave., Chicago, Ill. (See page 323.)
 Buffum Tool Co., Louisiana, Mo. (See page 883.)
 Heller Bros. Co., 865 Mt. Prospect Ave., Newark, N. J.
 Orum S. R. M. (North Philadelphia), Philadelphia, Pa.
 Reliable Mfg. Co., 2819 Prospect Ave., Cleveland, O.
 Service Station Supply Co., 124 E. Larned St., Detroit, Mich.
 Storage Battery Supply Co., 1535 Cherry St., Philadelphia, Pa.

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RE-BORING MACHINE



Accurate!

Accurate to .0005 of an inch.

Weight to be lifted to cylinder base 60 lbs.

Re-bores cylinder varying from $2\frac{1}{2}$ to $5\frac{1}{4}$ inches (inclusive) in diameter.

THE HUBACO Re-boring machine makes errors in cylinder re-boring mechanically impossible. It performs perfectly the most difficult re-boring job without the services of a skilled mechanic.

Used wherever an extremely accurate, portable, inexpensive cylinder re-boring machine is required.

Write for Booklet today

HUGHSON-BACON COMPANY

"TOOLS OF QUALITY"

ELEVENTH AT MARKET
SAN FRANCISCO, CALIFORNIA

Please mention The Automobile Trade Directory

TOOLS, Storage Battery Repair (Continued)

Street Gate & Mfg. Co., 118 E. Ryder St., Litchfield, Ill.
 Stuckeman Bros., 330 Liberty Ave., Pittsburgh, Pa.
 Thompson Mfg. Co., Liberty & North Sts., Meadville, Pa.
 Weiman—See Auto Electric Sales Co.
 Xander, J. G., 824 Court St., Reading, Pa.

TOOLS, Storage Battery, Terminal Cleaning

Four-In-One—See Xander, J. G.
 Xander, J. G., 824 Court St., Reading, Pa.
 "Four-In-One."

TOOLS, STUD BOLT—See Extractors, Stud Bolt

TOOLS, Threading

Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 885.)
 Federal Products Corp., 393 Harris Ave., Providence, R. I.
 Geometric Tool Co., Blake & Valley Sts., New Haven, Conn.
 Modern Tool Co., State & Second Sts., Erie, Pa.
 Namco—See National Acme Co.
 National Acme Co., Cleveland, O. "Namco." (See page 601.)
 Rickert-Shafer Co., 613 W. 11th St., Erie, Pa.
 Rivett Lathe & Grinder Co., 20 Riverview Rd. (Brighton), Boston, Mass.
 Smith Tool & Mfg. Co., R. G., 245-47 N. J. R. R. Ave., Newark, N. J.
 Victor Tool Co., Waynesboro, Pa.

TOOLS, Tire

(For taking off and putting on tires; for Rim Tools—See Tools, Demountable Rim Contracting)

B. B.—See Bjornlie Mfg. Co.
 Bjornlie Mfg. Co., 129 N. Broadway, Watertown, S. Dak. "Perfect," "B. B."
 Block Tire Tool Co., 505 Elghth St., Cincinnati, O.
 Bowles & Little, 611 Mulberry St., Des Moines, Ia. "Case."
 Bridgeport Hardware Mfg. Corp., 461 Iranistan Ave., Bridgeport, Conn. "Matchless-Thor."
 Buckeye—See Central Brass & Fixture Co.
 Carlson & Co., Charles G., 3725 Wall St., Chicago, Ill. "Star."
 Case—See Bowles & Little.
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Springfield," "Buckeye."
 Champ Spring Co., 2107 Chouteau Ave., St. Louis, Mo.
 Cox Brass Mfg. Co., Albany, N. Y. (See page 168.)
 Cunningham & Berrien, 25 W. 43rd St., New York, N. Y. (Sole Distributors for D. C. Woodworth, Lewiston, Me.) (See page 897.)
 Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.
 Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. (See page 107.)

Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 933.)
 Greb Co., 195 State St., Boston, Mass. (See page 667.)
 Hugro Mfg. Co., Warsaw, Ind.
 Jackson—See Standard Machine Mfg. Co.
 Jiffy Tire Setter Co., 205 W. Center St., Warsaw, Ind.
 L. & L.—See Larson & Lundberg.
 L. & M.—See Long Machine Works.
 Larson & Lundberg, 325 N. Main St., Kewanee, Ill. "L. & L."
 Lewsen Mfg. Co., Portland, Me. "Two-In-One."
 Long Machine Works, Adam A., Ave. E & St. Paul St., Rochester, N. Y. "L. & M."
 M. M. & E. Sales Co., Lenawee Co. Bank Bldg., Adrian, Mich.
 Maremont Mfg. Co., 916-18 S. Wabash Ave., Chicago, Ill. (See page 791.)
 Marquette Mfg. Co., 218 S. Wabasha St., St. Paul, Minn.
 Matchless-Thor—See Bridgeport Hardware Mfg. Co.
 Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Nemours Trading Corp., 46th St. & Lexington Ave., New York, N. Y. "Woodworth."
 Patented Products Co., 1938 Calumet Ave., Detroit, Mich. "Pierce."
 Perfect—See Bjornlie Mfg. Co.
 Perfect—See Pratt Mfg. Co.
 Perfect Handle—See Smith & Co.
 Perfection Mfg. Co., New Martinsville, W. Va.
 Pierce—See Patented Products Co.
 Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill. "Perfect."
 Rhodes Mfg. Co., S. Division St. & First Ave., Grand Rapids, Mich.
 Shawver Co., rear 21 W. Pleasant St., Springfield, O. "Springfield."
 Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."
 Smith & Hemenway, 99 Coit St., Irvington, N. J.
 Spee Dee—See Hugro Mfg. Co.
 Springfield—See Central Brass & Fixture Co.
 Springfield—See Shawver Co.
 Standard Machine Mfg. Co., Pierce Bldg., St. Louis, Mo. "Jackson."
 Star—See Carlson & Co.
 Tobey, Wm. L., 9 Lewis St. (E. Boston), Boston, Mass.
 Two-In-One—See Lewsen Mfg. Co.
 Wallace Engineering Co., 542 W. Jackson Blvd., Chicago, Ill.
 Wieland, Chas., Yankton, S. D.
 Woodworth—See Nemours Trading Corp.
 Woodworth, D. C.—See Cunningham & Berrien.

TOOLS, Tire Chain Attaching

Some or toggle clamps to draw ends of tire chains together when putting on wheel so they may be easily hooked or fastened)

Alcemo Mfg. Co., 20 Bridge St., Newark, N. J.
 Atlasta Specialty Mfg. Co., 2941-43 Locust St., St. Louis, Mo.
 Buckeye—See Central Brass & Fixture Co.
 Buffum Tool Co., Louisiana, Mo. (See page 883.)
 Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Everything is listed under the NOUN or principal word

Trade  Mark
Reg. U. S. Pat. Off.

Buffum Tools

Trade  Mark
Reg. U. S. Pat. Off.

SPECIFY THEM OF YOUR JOBBER—HE HAS THEM



Double Bent Ends Shaped Screw Drivers

No. 2125—4"x3/16" Blued Fin.....	\$0.25
No. 2126—5"x3/4" Blued Fin.....	.30
No. 2127—6"x5/16" Blued Fin.....	.35



Curved Bearing Scraper Sets

No. 1766—3" Blade.....	\$0.35
No. 1767—3 1/4" Blade.....	.50
No. 1768—4" Blade.....	.65
No. 1765—Set of 3 a box.....	1.50



"Climax" Auto Chain Repair Tools

No. 1927—12 3/4".....	\$1.25
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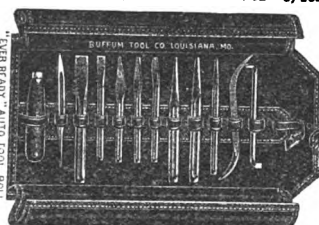


Cotter Pin Tools

No. 1896—5/16x7" N.P.....	\$0.25
No. 1900—5/16x7" Pol. Ends.....	.22
No. 1902—5/16x6" Oil Fin.....	.15

Knurled or Pin Punches

No. 725	
3/4x3/32x4".....	\$0.25
No. 726	
3/4x4/32x4".....	.25
No. 727	
3/4x5/32x4".....	.25
No. 728	
3/4x6/32x4".....	.25
No. 729	
3/4x7/32x4".....	.25
No. 730	
3/4x8/32x4".....	.25
Polished Ends.	



"Ever Ready" Auto Canvas Tool Rolls

Send for Special Tool Kit Catalog

No. 1823—Complete.....	\$2.25
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Automobile Punches

No. 658	
5/16x3/4x9".....	\$0.30
No. 659	
5/16x3/16x9".....	.30
No. 660	
3/4x3/4x9".....	.30
No. 661	
3/4x3/16x9".....	.30
No. 662	
7/16x3/4x9".....	.30
No. 663	
7/16x5/16x9".....	.30
No. 664	
3/4x3/4x9".....	.30
No. 665	
3/4x5/16x9".....	.30
Full Polished Blued Fin.	



Combination Pliers

No. 2375—5" Blued.....	\$0.35
No. 2376—5" N.P.....	.50
No. 2377—6" Blued.....	.50
No. 2378—6" N.P.....	.75



Buick Valve Lifters
Price \$2.00



Octagon Center Punches

No. 750—3/4x2/32x4".....	\$0.20
No. 751—5/16x3/32x4".....	.20
No. 752—3/4x4/32x4".....	.25
No. 753—7/16x5/32x4".....	.28
Polished Ends.	

Buffum Tool Company - Louisiana, Mo., U. S. A.
MANUFACTURERS

"High Grade Tools for High Grade Workmen"

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TOOLS, Tire Chain Attaching (Continued)

Central Flatiron Mfg. Co., Grand Ave., John-
son City, N. Y.

Foss-Hughes Co., 21st & Market Sts., Phila-
delphia, Pa. "Right Way."

Kraeuter & Co., Newark, N. J.
(See page 643.)

Right Way—See Foss-Hughes Co.

TOOLS, Tire Chain Repair

(For removing old and applying new cross sections
on tire chains)

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
B. & A. Machine Co., 66 Broad St., New York,
York, N. Y. "Spook."

Buffum Tool Co., Louisiana, Mo. "CH-
max." (See page 883.)

Climax—See Buffum Tool Co.

Kraeuter & Co., Newark, N. J.
(See page 643.)

McKalg Drop Forge Co., 14 Perry St., Buf-
falo, N. Y.

Shelley Tool Co., Saranac Lake, N. Y.

Spook—See B. A. Machine Co.

TOOLS, Tire Deflating

(For holding down valve plunger to allow air to
escape without removing the plunger; for De-
flating Machines—See Machines, Tube Deflating
and Valve Removing)

Handy Mfg. Co., 15 Library St., Grand
Rapids, Mich. (See page 75.)

Ideal—See Van's Auto Specialty Co.

Security Tool Works, Jackson Blvd., Chicago,
Ill.

Sprick Bros. Investment Co., Stickney, S.
Dak.

Van's Auto Specialty Co., Clyde, O. "Ideal."

TOOLS, Tire Making

Caterpillar Mfg. Co., 608 S. Dearborn St.,
Chicago, Ill. (See page 665.)

TOOLS, Tire Spreading

(For Tire Spreading Machines—See Machines,
Tire Inspecting)

Giant—See Haywood Tire & Equipment Co.
Haywood Tire & Equipment Co., 1230 N. Capito-
l Ave., Indianapolis, Ind. "Giant."

Nation Co., 332 W. 16th St., Los Angeles, Cal.
Western Rubber Mold Co., 243 N. Crawford
Ave., Chicago, Ill.

TOOLS, Tire Tread Rolling and Peeling

Diamond E—See Everhard Mfg. Co.

Everhard Mfg. Co., 317-19 Schroyer Ave.,
S. W., Canton, O. "Diamond E."

Leader Skid Chain Co., 4104 Manchester Ave.,
St. Louis, Mo.

P. S. M. Co., 3116-36 Snelling Ave., Min-
neapolis, Minn. (See page 931.)

Sanport Co., Murphy Bldg., Indianapolis, Ind.
Western Rubber Mold Co., 243 N. Crawford
Ave., Chicago, Ill.

Zwebell Bros. Co., 482 Milwaukee St., Mil-
waukee, Wis.

TOOLS, Tire Valve Retreading

Elgin Auto Tool Co., 112 Division St.,
Elgin, Ill. "5 in 1." (See page 885.)

5 in 1—See Elgin Auto Tool Co.

Five-In-One—See Schrader's Son, A.

G T D—See Greenfield Tap & Die Corp.

Greenfield Tap & Die Corp., Greenfield,
Mass. "Hercules," "Utility," "G T D."
(See page 885.)

Hercules—See Greenfield Tap & Die Corp.

Hiller Valve Wrench Co., H. W., 747 Broad-
way, Lorain, O.

Nelson Mfg. Co., A., 2700 Southport Ave.,
Chicago, Ill.

Omega—See Stevens & Co.

Roberge & Sons Mfg. Co.—See Knight Co.

Schrader's Son, A., Brooklyn, N. Y. "Five-
In-One." (See page 241.)

Stevens & Co., 375 Broadway, New York,
N. Y. "Omega." (See page 197.)

Utility—See Greenfield Tap & Die Corp.

TOOLS, Tire Vulcanizing

Diamond E—See Everhard Mfg. Co.

Everhard Mfg. Co., 317-19 Schroyer Ave.,
S. W., Canton, O. "Diamond E."

Fairbanks Co., New York, N. Y. (Sole
Distributors for T. & T. Tire Dresser
Co., San Francisco, Cal.)

(See pages 491 to 494.)

P. S. M. Co., 3116-36 Snelling Ave., Min-
neapolis, Minn. (See page 931.)

T. & T. Tire Dresser Co.—See Fairbanks Co.

**TOOLS, TRANSMISSION BAND RIVET-
ING FOR FORDS—See Machines, Brake
Band Riveting****TOOLS, Transmission Band Spring
Compressing for Fords**

Apco Mfg. Co., 703 Eddy St., Providence, R. I.
Knight Co., Harry, S. W. Life Bldg., Dallas,
Tex. (Sales Department for Roberge &
Sons Mfg. Co., Dallas, Tex.)

Roberge & Sons Mfg. Co.—See Knight Co.

**TOOLS, Transmission Band Spring
Connecting for Fords**

Hinckley-Myers Co., Water St., Jackson, Mich.

**TOOLS, TREAD PEELING—See Tools,
Tire Tread Rolling and Peeling****TOOLS, TREAD ROLLING—See Tools,
Tire Tread Rolling and Peeling****TOOLS, Valve Cage Removing**

C. & S.—See Culavin & Smith.

Culavin & Smith, Dunlap, Ia. "C. & S."

J. & B. Mfg. Co., Pittsfield, Mass.

Newton Mfg. Co., Plainville, Conn.
(See page 315.)

TOOLS, Valve Grinding

(For Valve Grinding Machines—See Machines, Valve
Grinding)

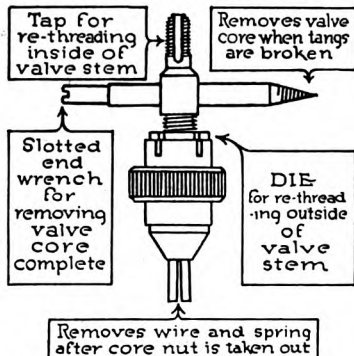
Ainge Tool, Die & Machine Works, Geo. H.,
18-20 S. Spring St., Springfield, O.

Albertson & Co.—See Jonas, C. N. & F. W.

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ELGIN

5-PURPOSE
TIRE VALVE TOOL



The most perfect and best made tire valve tool ever offered.

List Price Each.....\$1.25
Jobbers and Dealers: Write for Discounts

ELGIN AUTO TOOL CO.

112 Division Street ELGIN, ILLINOIS

Sales Department

JESSOP & THOMPSON

1421 So. Michigan Ave. CHICAGO, ILL.



Armstrong Lathe Tools

For Turning, Boring, Knurling, Threading, Cutting Off and Side Work.
Write for our new general catalog.

We Also Make
Lathe Dogs, Clamps, Ratchet Drills, Wrenches

Armstrong Bros. Tool Co.

"The Tool Holder People"

304 N. Francisco Ave.

Chicago, Ill.

THE NEW WAY TO GRIND VALVES

The Victor Valve Grinder is a screw driver, until you open out a lever in the handle—

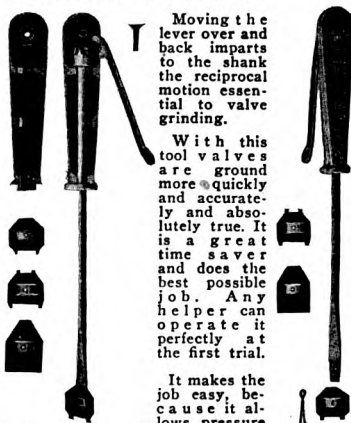
Then it becomes a special valve grinder and an instrument of marvelous facility and twofold effectiveness.

Swinging the lever over to the top of the handle to the other side revolves the shank of the tool.

The VICTOR VALVE GRINDER

Master of them all

Coming with this tool are a number of keys instantly attachable to the screw driver end and fitting or engaging with any valve on any car from Ford to Twin-Six Packard.



to be brought against the valve—just enough of it and in the right way—with one hand, while the other hand is used to operate the handle.

This tool and kit of keys is worth its weight in gold. All it costs is \$3. Money back if not satisfied.

Write for attractive agency proposition

Common Sense Mfg. Co.

8 South Dearborn Street
CHICAGO, ILL.

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TOOLS, Valve Grinding (Continued)

American Radio & Research Corp., Medford Hillside, Mass. "Whitcomb."
 Aash and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern & South Eastern Distributors for "Sioux" Tools.) (See page 247.)
 Ashcroft Mfg. Co., 119 W. 40th St., New York, N. Y.
 Au-To Compressor Co., 308 S. Mulberry St., Wilmington, O. "Turko," "Oro."
 Autoquip Mfg. Co., Rochester, N. Y.
 B & B Motor Specialties Co., 607 N. 13th St., Philadelphia, Pa.
 Bird & Temen, 2070 Broadway, Oakland, Cal.
 Bowen Products Corp., 923 17th Ave., S. E., Minneapolis, Minn. "Perfect."
 Braunsdorf-Mueller Co., 395 Madison St., Elizabeth, N. J.
 Brown, W. C., 884 Sherman St., Niles, O. "Kandikid."
 Brown Co., 1071-73 Clinton St., Syracuse, N. Y.
 Burd High Compression Ring Co., Rockford, Ill. (See pages 715 and 727.)
 Common Sense Mfg. Co., 8 S. Dearborn St., Chicago, Ill. "Victor." (See page 885.)
 Dual Tool Co., 12432 Euclid Ave., Cleveland, O.
 E-Z—See Syracuse Wrench Co.
 Goodell-Pratt Co., Greenfield, Mass.
 Graham Roller Bearing Corp., Coudersport, Pa. (See page 110.)
 Hi-Speed—See Loomis-Beardsley Co.
 Hawthorne Lamp Works, 1410 Michigan Ave., Chicago, Ill. "Jiffy," "Instant."
 Hudson Motor Specialties Co., 1932 Arch St., Philadelphia, Pa.
 Instant—See Hawthorne Lamp Works.
 Jameson & Burbank, 19 Walnut St., Neponsett, Mass. "Little Wonder."
 Jiffy—See Hawthorne Lamp Works.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Iowa.) "Sioux." (See page 134.)
 Kaiser, L. J., 2274 Park Blvd., Detroit, Mich. "Uni-Ver-Sal."
 Kandikid—See Brown, W. C.
 Kellogg Mfg. Co., Rochester, N. Y.
 Lansfield Mfg. Co., 510 First Ave., West Haven, Conn.
 Little Wonder—See Jameson & Burbank.
 Loomis-Beardsley Co., 1123 Mt. Vernon Ave., Columbus, O. "Hi-Speed."
 M-B Tool Co., Danielson, Conn.
 M & M Mfg. Co., 7447 S. Chicago Ave., Chicago, Ill. (See page 591.)
 Millers Falls Co., Millers Falls, Mass.
 Minute—See Newton Mfg. Co.
 Mossberg Co., Frank, Attleboro, Mass.
 Nance Mfg. Co., 1348 N. Clark St., Chicago, Ill.
 Newton Mfg. Co., Plainville, Conn. "Minute." (See page 315.)
 Oro—See Au-To Compressor Co.
 Perfect—See Bowen Products Corp.
 Rothermel, A. P., 2915 N. Taylor Ave., St. Louis, Mo.
 Simplicity—See Universal Equipment & Supply Co.
 Sioux—See Jonas, C. N. & F. W.
 Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y. "E-Z."
 Turko—See Au-To Compressor Co.
 Universal Equipment & Supply Co., Syracuse, N. Y. "Simplicity." (See page 439.)
 Uni-Ver-Sal—See Kaiser, L. J.
 Victor—See Common Sense Mfg. Co.
 Wall, J. H., 290 Hope St., Bristol, R. I.

Whitcomb—See American Radio & Research Corp.
 White Mfg. Co., 511 Lincoln Way, South Bend, Ind.

TOOLS, Valve Grinding, for Fords

Albertson & Co.—See Jonas, C. N. & F. W.
 American Radio & Research Corp., Medford Hillside, Mass. "Whitcomb."
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Aash and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern & South Eastern Distributors for "Sioux" Tools.) (See page 247.)
 Bird & Temen, 2070 Broadway, Oakland, Cal.
 Corbin, P. & T., Park & Orchard Sts., New Britain, Conn.
 Efemco—See Foster, Merriam & Co.
 Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawasco." (See page 429.)
 Fawasco—See Faw Co.
 Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)
 Graham Roller Bearing Corp., Coudersport, Pa. (See page 110.)
 Hi-Speed—See Loomis-Beardsley Co.
 Hudson Motor Specialties Co., 1932 Arch St., Philadelphia, Pa.
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Iowa.) "Sioux." (See page 134.)
 Kunkel Valve Grinder Mfg. Co., Hart, Mich. (See page 877.)
 Loomis-Beardsley Co., 1123 Mt. Vernon Ave., Columbus, O. "Hi-Speed."
 M-B Tool Co., Danielson, Conn.
 Mossberg Co., Frank, Attleboro, Mass.
 Nance Mfg. Co., 1348 N. Clark St., Chicago.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Sioux—See Jonas, C. N. & F. W.
 Spiro Mfg. Co., C., 68-73 E. 131st St., New York, N. Y. "Uniq."
 Uniq—See Spiro Mfg. Co.
 Wall, J. H., 290 Hope St., Bristol, R. I.
 Whitcomb—See American Radio & Research Corp.
 White Mfg. Co., 511 Lincoln Way, South Bend, Ind.
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

TOOLS, Valve Lifting and Spring Compressing

(For compressing valve springs so that the pin or key may be readily removed or inserted and the valve taken out or put in)

Ainge Tool, Die & Machine Works, Geo. H., 18-20 S. Spring St., Springfield, O.
 American Metal Parts Mfg. Co., Milwaukee, Wis. "Handy."
 American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.
 Apco Mfg. Co., 703 Eddy St., Providence, R. I.
 Au-To Compressor Co., 308 S. Mulberry St., Wilmington, O. "Oro," "Turko."
 Booth, Homer A., 395 Fenn St., Pittsfield, Mass.
 Bowers, W. S., Blandon, Pa.
 Braunsdorf-Mueller Co., 395 Madison St., Elizabeth, N. J.
 Bridgeport Hardware Mfg. Corp., 461 Irishman Ave., Bridgeport, Conn. (Sole Distributors for Fay Mfg. Co., New York, N. Y. "Fay-Oh-Rite.")
 Bryant—See Stevens & Co.
 Buffum Tool Co., Louisiana, Mo. (See page 883.)
 C. P.—See Clinton Machine Works.

Everything is listed under the NOUN or principal word



CRAFTSMAN STEEL TOOLS

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PUNCHES—CHISELS—HATCHETS
CRAFTSMAN TOOL KITS**

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Please mention The Automobile Trade Directory

TOOLS, Valve Lifting and Spring Compressing (Continued)

Clinton Machine Works, 460 High St., Clinton, Mass. "C. P."

Day's Workrite—See MacKenzie-Waterhouse Co.

Dual Tool Co., 12432 Euclid Ave., Cleveland, O. Duby, J. F., 11 River St., Mattapan, Mass.

E-Z—See Syracuse Wrench Co.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Efemco—See Foster, Merriam & Co.

Essan Motor Service, 138-40 Lott St., Brooklyn, N. Y.

Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.

Fay-Oh-Rite—See Bridgeport Hardware Mfg. Co.

Fay Mfg. Co.—See Bridgeport Hardware Mfg. Corp.

Fellbach Machine Works, 424 36th St., North Milwaukee, Wis.

Fish-Best Co., 37 S. Wabash Ave., Chicago, Ill.

Fitz-Awl—See Wayland Specialty Mfg. Co.

Flexible Valve Remover Co., 201 Eddy St., Providence, R. I.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. (See page 107.)

Genett & Longyear, Longyear Bldg., Marquette, Mich.

Goodell-Pratt Co., Greenfield, Mass.

Graham Roller Bearing Corp., Coudersport, Pa. (See page 110.)

H. & G. Tool Co., 739 Ridge Ave., Pittsburgh, Pa.

Hallbauer Lifter Co., 1537 Wellston Ave. (Wellston), St. Louis, Mo.

Hallgren, Carl, 683 Summit Ave., Pasadena, Cal.

Handy—See American Metal Parts Mfg. Co. Harper, J. P., Bluefield, W. Va.

Hedden Place Machine Co., East Orange, N. J. "Stevenson."

Hoadley, F. B., 479 Willow St., Waterbury, Conn.

Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Kay Dee" Tools.) (See page 179.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Porter, Inc., San Diego, Cal. "Perfection.") (See page 135.)

K-D Mfg. Co., Rear 524 N. Plum St., Lancaster, Pa. "Kay-Dee."

Kay-Dee—See K-D Mfg. Co.

King Pressed Steel & Mfg. Co., Boston, Mass.

Kister Mfg. Co., 373 Broadway, Milwaukee, Wis. "Lightnin'."

Kraenter & Co., Newark, N. J. (See page 643.)

Lightnin'—See Parkhurst & Co.

Lightning—See Kister Mfg. Co.

Loomis-Beardsley Co., 1123 Mt. Vernon Ave., Columbus, O. "Never-Slip."

MacKenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "Day's Workrite."

Mechanical & Electrical Mfg. Co., 2237 Prairie Ave., Chicago, Ill. "Triumph."

Merts Co., H. B., 1408 Rutherford Ave., Pittsburgh, Pa.

Mickey—See Van's Auto Specialty Co.

Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radium."

Morgan Mfg. Co., Court St., Keene, N. H. "Utility." (See page 675.)

Never-Slip—See Loomis-Beardsley Co.

Newton Mfg. Co., Plainville, Conn. (See page 315.)

Only Grease Gun Co., Newton, Ia. "T. & L."

Oro—See Au-To Compressor Co.

Parkhurst & Co., H. G., 180 N. Dearborn St., Chicago, Ill. "Lightnin'."

Perfect Handle—See Smith & Co.

Perfection—See Jonas, C. N. & F. W.

Porter, Inc.—See Jonas, C. N. & F. W.

Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill.

Price Auto Tool Works, W. W., Elm Grove, W. Va.

Radium—See Milwaukee Auto Specialty Co.

Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."

Sees-All Mfg. Co., 1810 W. Lake Ave., Seattle, Wash.

Smith & Co., H. D., Plantsville, Conn. "Perfect Handle," "Ultimate."

Sterling—See Republic Auto Parts Co.

Stevens & Co., 375 Broadway, New York, N. Y. "Bryant." (See page 197.)

Stevenson—See Hedden Place Machine Co.

Sunnen Products Co., 2717 Lafayette Ave., St. Louis, Mo.

Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y. "E-Z."

T. & L.—See Only Grease Gun Co.

Trex—See Trexler Co.

Trexler Co., 1418 Walnut St., Philadelphia, Pa. "Trex." (See page 467.)

Tribune Engineering Co., Front St., Owego, N. Y.

Triumph—See Mechanical & Electrical Mfg. Co.

Turko—See Au-To Compressor Co.

Ultimate—See Smith & Co.

Utility—See Morgan Mfg. Co.

Van's Auto Specialty Co., Clyde, O. "Mickey."

Vlchek Tool Co., 3000 E. 87th St., Cleveland, O.

Wayland Specialty Mfg. Co., Wayland, N. Y. "Fitz-Awl."

TOOLS, Valve Lifting and Spring Compressing, for Fords

(For compressing valve springs so that the pin may be readily removed or inserted and the valve taken out or put in)

Abel—See Schnabel Co.

American—See Service Station Equipment Co.

American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.

Booth, Homer A., 395 Fenn St., Pittsfield, Mass.

Brocksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

C. M. & D.—See Chicago Mfg. & Distributing Co.

Day's Workrite—See MacKenzie-Waterhouse Co.

Donlin Auto Co., C. A., Hopkins, Mo.

Duby, J. F., 11 River St., Mattapan, Mass.

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)

Efemco—See Foster, Merriam & Co.

Fish-Best Co., 37 S. Wabash Ave., Chicago, Ill.

Fitz-Awl—See Wayland Specialty Mfg. Co.

Everything is listed under the NOUN or principal word

TOOLS, Valve Lifting and Spring Compressing, for Fords (Cont'd)

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)
 Franklin Mfg. Co., 354 Mortimer St., Buffalo, N. Y. (See page 643.)
 Fulton Co., Milwaukee, Wis. (See pages 569 to 574.)
 Genett & Longyear, Longyear Bldg., Marquette, Mich.
 Graham Roller Bearing Corp., Coudersport, Pa. (See page 110.)
 Harper, J. P., Bluefield, W. Va.
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "Kay Dee" Tools.) (See page 179.)
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Porter, Inc., San Diego, Cal. "Perfection.") (See page 135.)
 K-D Mfg. Co., Rear 524 N. Plum St., Lancaster, Pa. "Kay-Dee."
 Kay-Dee—See K-D Mfg. Co.
 King Pressed Steel & Mfg. Co., Boston, Mass.
 Kister Mfg. Co., 373 Broadway, Milwaukee, Wis. "Lightning."
 Larson Tool & Stamping Co., Olive St., Attleboro, Mass.
 Lightning—See Parkhurst & Co.
 Lightning—See Kister Mfg. Co.
 Loomis-Beardsley Co., 1123 Mt. Vernon Ave., Columbus, O. "Never-Slip."
 Mapson Mfg. Co.—See Jonas, C. N. & F. W.
 MacKenzie-Waterhouse Co., Transportation Bldg., Chicago, Ill. "Day's Workrite."
 Mosco—See Motor Specialties Co.
 Motor Specialties Co., Beaver St., Waltham, Mass. "Mosco."
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Never-Slip—See Loomis-Beardsley Co.
 Parkhurst & Co., H. G., 180 N. Dearborn St., Chicago, Ill. "Lightnin."
 Perfection—See Jonas, C. N. & F. W.
 Porter, Inc.—See Jonas, C. N. & F. W.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Schnabel Co., Henry M., 27-31 Lake Ave., Greenwich, Conn. "Abel."
 Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."
 Stadoe—See Staderker Metal Specialty Co.
 Staderker Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadoe."
 Sterling—See Republic Auto Parts Co.
 Sunnen Products Co., 2717 Lafayette Ave., St. Louis, Mo.
 Wayland Specialty Mfg. Co., Wayland, N. Y. "Fitz-Awl."
 Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

TOOLS, Valve Pin Inserting for Fords

Sees—All Mfg. Co., 1810 Westlake Ave., Seattle, Wash.
 Wisconsin Mechanical Products Co., Fond du Lac, Wis.

TOOLS, Valve Reseating or Facing

(Special reamers for renewing worn or pitted valve seats and cutters for truing and refacing poppet valves)

Albertson & Co.—See Jonas, C. N. & F. W.
 American Valve Tool Mfg. Co., 354 W. 56th St., New York, N. Y.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and South Eastern Distributors for "Sioux" Tools.) (See page 247.)
 Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."
 Bean—See Liberty Metal Products Co.

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.
 Brooks Mfg. Co., J. W., 16 Mt. Joy Pl., New Rochelle, N. Y. "Economic."
 Cone—See Manley Mfg. Co.
 Dunham Co., D. F., 331 Fourth St., Oxnard, Cal. "Simplicity."
 Eclipse Accessories Mfg. Co., 1138 E. 112th St., Cleveland, O.
 Eclipse Mfg. Co., 424 N. Meridian St., Indianapolis, Ind. (Sole Distributors for A. C. Savidge Co., Indianapolis, Ind.)
 Economic—See Brooks Mfg. Co.
 Fossnacht—See Paro Co.
 G. B. Garage & Mfg. Co., 299 Franklin St., Hempstead, N. Y.
 Graham Roller Bearing Corp., Coudersport, Pa. (See page 110.)
 Halburn Co., 317 W. Pico St., Los Angeles, Cal.
 Hoerner Mfg. Co., 3929 Moneta Ave., Los Angeles, Cal. (See page 879.)
 Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Iowa.) "Sioux." (See page 134.)
 Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."
 Lipe, R. M., 230 The Alameda, San Jose, Cal.
 Manley Mfg. Co., York, Pa. "Cone." (See page 681.)
 National Auto Specialty Co.—See Paro Co.
 Noonan Mfg. Co., D. R., 219-21 W. Court St., Paris, Ill.
 Paro Co., H. G., 1416 S. Michigan Ave., Chicago, Ill. (Sole Distributors for National Auto Specialty Co., Tama, Ia. "Fossnacht.") (See page 441.)
 Payson Mfg. Co., Milan, Ill.
 Peoria—See Auto Mechanics Tool Co.
 Quinn—See Mullarky, G. E.
 Sargent, James M., Granville, Mass.
 Savidge Co.—See Eclipse Mfg. Co.
 Scully-Jones & Co., 80 E. Jackson St., Chicago, Ill.
 Simplicity—See Dunham Co.
 Simplicity—See Universal Equipment & Supply Co.
 Sioux—See Jonas, C. N. & F. W.
 Skinner Co., M. B., 563 W. Washington Blvd., Chicago, Ill.
 Tribune Engineering Co., Front St., Owego, N. Y.
 Universal Equipment & Supply Co., Syracuse, N. Y. "Simplicity." (See page 439.)
 Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.

TOOLS, Valve Reseating or Facing, for Fords

(Special reamers for renewing worn or pitted valve seats and cutters for truing and refacing valves; also for Valve Reseating and Facing Machines—See Machines, Valve Seating and Facing.)

Albertson & Co.—See Jonas, C. N. & F. W.
 American—See Service Station Equipment Co.
 Asch and Co., Inc., 16-24 W. 61st St., New York, N. Y. (Eastern and South Eastern Distributors for "Sioux" Tools.) (See page 247.)

Bean—See Liberty Metal Products Co.
 Dixie—See Southern Machine & Tool Co.
 Eclipse Accessories Mfg. Co., 1138 E. 112th St., Cleveland, O.
 Eclipse Mfg. Co., 424 N. Meridian St., Indianapolis, Ind. (Sole Distributors for A. C. Savidge Co., Indianapolis, Ind.)
 Efemco—See Foster, Merriam & Co.
 Fossnacht—See Paro Co.
 Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)
 G. B. Garage & Mfg. Co., 299 Franklin St., Hempstead, N. Y.

Everything is listed under the NOUN or principal word

TOOLS, Valve Reseating or Facing, for Fords (Continued)

Hoerner Mfg. Co., 3929 Moneta Ave., Los Angeles, Cal. (See page 879.)

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Albertson & Co., Sioux City, Iowa.) "Sioux." (See page 134.)

Liberty Metal Products Co., Front St. & First Ave., Berea, O. "Bean."

National Auto Specialty Co.—See Paro Co.

Noonan Mfg. Co., D. R., 219-21 W. Court St., Paris, Ill.

Paro Co., H. G., 1416 S. Michigan Ave., Chicago, Ill. (Sole Distributors for National Auto Specialty Co., Tama, Ia. "Fosnacht." (See page 441.)

Payson Mfg. Co., Milan, Ill.

Savidge Co.—See Eclipse Mfg. Co.

Service Station Equipment Co., 37th St. & S. Ashland Ave., Chicago, Ill. "American."

Sioux—See Jonas, C. N. & F. W.

Southern Machine & Tool Co., 3210 Locust St., St. Louis, Mo. "Dixie." (See page 879.)

Spiro Mfg. Co., C., 68-72 E. 131st St., New York, N. Y. "Uniq."

Stevens & Co., 375 Broadway, New York, N. Y. (See page 107.)

Uniq—See Spiro Mfg. Co.

Whitney Mfg. Co., R. S., 74 Nichols St., Lewiston, Me.

Wilson, K. R., 10-16 Lock St., Buffalo, N. Y.

TOOLS, VALVE RETHREADING—See Tools, Tire Valve Rethreading**TOOLS, VULCANIZING—See Tools, Tire Vulcanizing****TOOLS, WHEEL TRUEING—See Dressers, Emery Wheel****TOOLS, Wire Terminal Forming**

American Bosch Magneto Corp., (Brightwood) Springfield, Mass.

Elm City—See Mersick & Co.

Lake-Erb Mfg. Co., 405 E. Fourth St., New York, N. Y. (See page 893.)

Mersick & Co., C. S., 274-02 State St., New Haven, Conn. "Elm City." (See page 893.)

TOOTH CHAMFERING MACHINES—See Machines, Gear Tooth Chamfering**TOP BOW CLAMPS FOR FORDS—See Clamps, Top Bow****TOP BOW DRESSING MACHINES—See Machines, Top Bow Dressing****TOP BOW CLAMPS—See Holders, Top****TOP BOW SOCKETS—See Sockets, Bow****TOP BOWS—See Bows, Tops****TOP CLAMPS—See Holders, Top; also Fasteners, Top****TOP CLAMPS FOR FORDS—See Clamps, Top Bow****TOP CONVERTORS FOR FORDS—See Converters, Top****TOP COVERS—See Covers, Top****TOP CURTAIN POCKETS FOR FORDS—See Pockets, Top Curtain****TOP CURTAINS—See Curtains, Special Top****TOP DRESSING—See Dressing, Leather; also Dressing, Mohair****TOP ENVELOPES—See Covers, Top****TOP FABRICS—See Cloth; also Leather****TOP FASTENERS—See Fasteners, Top****TOP FIXTURES—See Fasteners, Curtain; also Fittings, Top; also Irons, Body; also Irons, Slat; also Rests, Bow; also Separators, Bow; also Sockets, Bow****TOP HOLDERS—See Holders, Top****TOP HOLDERS FOR FORDS—See Clamps, Top Bow****TOP IRONS—See Irons, Body****TOP LINING DYE—See Dye, Top Lining****TOP PATCHES—See Patches, Top****TOP REPAIR CEMENT—See Cement, Top Repair****TOP STRAPS—See Straps, Leather****TOP SUPPORTS—See Fasteners, Top****TOP VISORS—See Visors, Top****TOPS, Automobile**

(Including cape tops and demountable or winter tops of all kinds)

A-W—See Adams-Williams Mfg. Corp.

A-Z—See Zutman Body Mfg. Co.

A & E Auto Top Co., 23-35 E. Cross St., Ypsilanti, Mich.

Accurate Cover Co., 373 Canal St., New York, N. Y.

Acme Auto Top Co., 1421 Irving St., N. W., Washington, D. C.

Adams-Williams Mfg. Corp., 851 W. 52d St., New York, N. Y. "A-W."

Albright Co., S. S., 13th & U Sts., Sacramento, Cal.

All-Season Top Co., 4403 St. Aubin Ave., Detroit, Mich.

Allweather Top & Body Co., 6545 Carnegie Ave., Cleveland, O.

Alper Auto Top Co., 31 Willow St., Waterbury, Conn.

American Auto Trimming Co., 878 E. 72d St., Cleveland, O.

Anchor Top & Body Co., 2000 South St., Cincinnati, O.

Arizona Auto Top Co., 451 N. Central Ave., Phoenix, Ariz.

Artcraft Jr.—See General Top Co.

Atlanta Automobile Top & Trimming Co., 155-57 Edgewood Ave., Atlanta, Ga.

Auto Cape Top Co., 2334-38 S. Michigan Ave., Chicago, Ill.

Auto Leather Goods Co., 11276 Linden Ave., Stratford, Conn.

Badger—See Wisconsin Top Co.

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Baltimore Buggy Top Co., 107-13 W. Mt. Royal Ave., Baltimore, Md.

Barton Auto Top Co., 4445 Woodward Ave., Detroit, Mich.

Everything is listed under the NOUN or principal word

TOPS, Automobile (Continued)

- Birmingham Auto Top Co., 305 S. 20th St., Birmingham, Ala.
- Bison Trimming Co., 1185 Jefferson St., Buffalo, N. Y.
- Blasler-Sanborn Mfg. Co., 335 Columbia St., Utica, N. Y.
- Bliss Auto Top Co., C. F., 1351 Court Pl., Denver, Colo.
- Boston Auto Top Co., 98-100 Massachusetts Ave., Boston, Mass.
- Brackbill, Chas., 2419 N. Broad St., Philadelphia, Pa.
- Brackbill Auto Enclosure Co., B. F., 226 E. New St., Lancaster, Pa.
- Briggs Mfg. Co., 55 Leuschner Ave., Detroit, Mich.
- Buob & Schen, 500-10 Webster St., Cincinnati, O. (See page 895.)
- C-Den—See Comfort Cushion Co.
- Century Auto Top & Supply Co., 50 E. 26th St., Chicago, Ill.
- Champion Auto Top Co.—See Frankel Specialties Corp.
- Chicago Auto Equipment Co., 808-10 W. Jackson Blvd., Chicago, Ill.
- Chicago Carriage & Trimming Co., 3514-20 S. Michigan Ave., Chicago, Ill.
- Chicago Coach & Carriage Co., 1233-31 S. Michigan Ave., Chicago, Ill.
- Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Wilson."
- Clifton Mfg. Co., 223-27 Pleasant St., Waco, Tex.
- Columbia Tire & Top Co., 923 Commonwealth Ave., Boston, Mass.
- Comfort Cushion Co., 1629 Germantown Ave., Philadelphia, Pa. "C-Den."
- Continental Auto Top Mfg. Co., 3900 Washington Ave., St. Louis, Mo.
- Cooling Carriage Co., 406 French St., Wilmington, Del.
- Copp Co., George W., 204-14 14th St., Long Island City, N. Y. (Also Eastern Distributors for "Anchor" Tops.) (See page 123.)
- Cream City Trimming Co., 67-71 Juneau Ave., Milwaukee, Wis.
- Dallas Buggy Top Co., 543 Main St., Dallas, Tex.
- De Luxe—See Link, Chas. W.
- De Luxe—See Kalamazoo Sedan Co.
- Donegan Auto Body & Specialty Co., 339 Trumbull St., Hartford, Conn.
- Earl Motors, Le Roy & Horton Sts., Jackson, Mich.
- Edwards Mfg. Co., 1339 Clinton Ave., Detroit, Mich.
- Empire Auto Top Co., 222-26 N. 21st St., Philadelphia, Pa.
- Ferdman-Guider Co., 2200 Woodward Ave., Detroit, Mich. (See page 127.)
- Fehring Carriage Co., 601-09 Third St., Columbus, Ind.
- Flagler Co., 159 Carlton Ave., Brooklyn, N. Y.
- Frankel Specialties Corp., 356 W. 50th St., New York, N. Y. (Sole Distributors for Champion Auto Top Co., New York.)
- Gabel Co., A. H., Goodman St. & Monroe Ave., Rochester, N. Y. (See page 893.)
- Gates Mfg. Co., 835 N. Meridian St., Indianapolis, Ind.
- Geco—See Glover Equipment Co.
- Genesee Mfg. Co., 516-18 Harrison St., Flint, Mich.
- General Top Co., 4059 St. Clair Ave., Cleveland, O. "Art Craft Jr."
- Gillig—See Harvey Top & Body Co.
- Glover Equipment Co., 412 N. Capitol Ave., Indianapolis, Ind. "Geco."
- Goldin Mfg. Co., 127-31 S. Forsyth St., Atlanta, Ga.
- Harrington Auto Top Co., 310 Virginia St., Sioux City, Ia.
- Hartman-Townsend Co., 14th & West Sts., Indianapolis, Ind.
- Harvey Top & Body Co., 312-20 Main St., Buffalo, N. Y. "Gillig."
- Haves & Miller Co., 512-22 E. 57th St., New York, N. Y.
- Herrity Co., E. A., 60 Summer St., Stamford, Conn.
- Holden One-Man Top Co., 1776 Broadway, New York, N. Y.
- Hund & Co., H. E., 1208 Fort St., W., Detroit, Mich.
- Huntington Auto Top Works, New York Ave., Huntington, N. Y.
- Indiana Top & Vehicle Co., Laurensburg, Ind.
- Inland Auto Top Factory, 211 S. Monroe St., Spokane, Wash.
- Johnston Commercial Body Co., Fort Smith, Ark.
- Jones & Pimm Co., 422 W. Onondaga St., Syracuse, N. Y.
- Kalamazoo Sedan Co., Kalamazoo, Mich. "De Luxe."
- Kingsbury-Leahy Co., Albany, N. Y.
- Kints Service & Mfg. Co., 1035-37 Third Ave., Terre Haute, Ind.
- Koupet Auto Top Co., Belleville, Ill.
- Kroh Mfg. Co., C. Z., 1212-14 Jackson Ave., Toledo, O.
- La Due Auto Top Co., 1021 Monroe St., Toledo, O.
- Lancaster Body Co., Fountain & New Holland Aves., Lancaster, Pa.
- Larkins & Co., Geary St. at First Ave., San Francisco, Cal.
- Laroche, J. P., 5915-20 S. Ashland Ave., Chicago, Ill.
- Liberty Auto Co., 1750 E. 12th St., Oakland, Cal.
- Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
- Link, Chas. W., 1208 S. Grand Ave., Los Angeles, Cal. "De Luxe."
- McCardell & Co., J. R., 395 S. Warren St., Trenton, N. J.
- McDonald Bros., 1005-07 E. Pike St., Seattle, Wash.
- Mann-Aldrich Carriage Co., 1200 Lincoln St., Denver, Colo.
- Miller, Hicks & Hewitt, 509-15 W. 56th St., New York, N. Y.
- Mills Cabinet Co., Racine Junction, Racine, Wis. "Racine."
- Mobile Top Co., 26 Selden Ave., Detroit, Mich.
- Murray & Co., P. A., Newton, Mass.
- Novelty Carriage Works, 312 Second Ave., Spokane, Wash.
- Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
- Peerless Top Co., York St. & Central Ave., Cincinnati, O.
- Perkins-Campbell Co., Cincinnati, O. (See page 290.)
- Phoenix Carriage Co., Evans, South & Woodrow Sts., Cincinnati, O. (See page 297.)
- Powers Mfg. Co., Waterloo, Iowa. (See page 530.)
- Production Auto Top Co., 372 Fourth Ave., Long Island City, N. Y.
- Racine—See Mills Cabinet Co.
- Reardon Top Shop, Clark St., Amesbury, Mass.
- Rex Mfg. Co., Connersville, Ind. (See page 897.)
- Rhodes, W. C., 1611 Vine St., Philadelphia, Pa.
- Roy Top Co., 1842 Michigan Ave., Chicago, Ill. "Victory."
- Samson Auto Top & Equipment Co., 103-05 Fountain St., Providence, R. I.

Everything is listed under the NOUN or principal word

TOPS, Automobile (Continued)

Sargent & Ham Co., 28-32 Scotia St., Boston, Mass.
 Schreiber Carriage Mfg. Co., Charlton, Ia.
 Sharrer Patent Top Co., 250 W. 54th St., New York, N. Y. (See page 893.)
 Shields Carriage Co., 11 Carriage Ave., Amesbury, Mass.
 Shugers Mfg. Co., 1002-04 S. Los Angeles St., Los Angeles, Cal.
 Sisman Co., Andrew C., 1221 Beaufait Ave., Detroit, Mich. "Tour-Coach."
 Springfield Auto Top & Upholstery Co., 226 Chestnut St., Springfield, Mass.
 Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
 Standard Auto Top & Body Co., 1333 Race St., Philadelphia, Pa.
 Standard Top Co., (Kingston), Wilkes-barre, Pa.
 Steiner, Jos., 409 N. Seventh St., Manitowoc, Wis.
 Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.
 Sutorius Auto Top Co., 621-23 Third Ave., S., Minneapolis, Minn.
 Tatco—See Thomas Auto Top Co.
 Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."
 Tompson, N. W., 10 Scotia St., Boston, Mass. (New England Distributors for Anchor and Racine Tops.) (See page 161.)
 Thompson Co., Robert, 1015 S. Grand Ave., Los Angeles, Cal.
 Tour-Coach—See Sisman Co.
 Union Top Mfg. Co., 346 Collins Ave., E., E. Pittsburgh, Pa.
 Universal Trimming Co., 2425 Michigan Ave., Chicago, Ill.
 Vetter Auto Body Co., 214-16 W. 65th St., New York, N. Y.
 Victory—See Roy Top Co.
 Waynesburg Carriage Co., Waynesburg, O.
 Weatherproof Body Corp., Corunna, Mich. (See page 185.)
 Western Auto Top Co., 1208-10 Jackson St., Omaha, Neb.
 Wilcox Co., M. L., Water St., Toledo, O.
 Williams Auto Top Works, C. T., 1107 Seventh St., Wichita Falls, Tex.
 Wilson—See Cincinnati Auto Specialty Co.
 Wisconsin Top Co., Racine, Wis. "Badger." (See page 299.)
 Wright & Co., C. E., Norfolk, Va.
 Zutman Body Mfg. Co., 2532 Cottage Grove Ave., Chicago, Ill. "A-Z."

TOPS, Special and One-Man, for Fords

A. & E. Auto Top Co., 33-35 E. Cross St., Ypsilanti, Mich.
 A-W—See Adams-Williams Mfg. Corp.
 Accurate Cover Co., 373 Canal St., New York, N. Y.
 Adams-Williams Mfg. Corp., 351 W. 53d St., New York, N. Y. "A-W."
 American Auto Top Co., N. Washington Ave. & Belt R. R., Delphi, Ind. "Faultless."
 Anchor Top & Body Co., 2000 South St., Cincinnati, O.
 Atlanta Automobile Top & Trimming Co., 155-57 Edgewood Ave., Atlanta, Ga.
 Auburn Auto Top Co., 213 E. Seventh St., Auburn, Ind.
 Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.
 Baltimore Buggy Top Co., 107-18 W. Mt. Royal Ave., Baltimore, Md.
 Brackbill, Charles, 2419 N. Broad St., Philadelphia, Pa.
 Brackbill Auto Enclosure Co., B. F., 226 E. New St., Lancaster, Pa.
 Call-Ford—See Streater Hearse & Body Co.
 Central Auto Top & Leather Co., 419½ N. Capitol Ave., Indianapolis, Ind.
 Cincinnati Auto Specialty Co., 312-14 Main St., Cincinnati, O. "Wilson."
 Cleveland Top & Specialty Co., Carnegie & E. 65th Sts., Cleveland, O.
 Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.
 Close-Tite—See Longdin-Brugger Co.
 Co-Zee—See Omaha Auto Top Co.
 Continental Auto Top Mfg. Co., 3900 Washington Ave., Chicago, Ill.
 Copp Co., George W., 204-14 14th St., Long Island City, N. Y. (Also Eastern Distributors for "Anchor" Tops.) (See page 123.)
 Crawford Mfg. Co., 211 N. Foushee St., Richmond, Va.
 D & D—See Droutman Mfg. Co.
 De Luxe—See Ero Mfg. Co.
 Detroit Slip Cover Co., 449 E. Canfield Ave., Detroit, Mich.
 Droutman Mfg. Co., 302-06 53rd St., New York, N. Y. "D. & D."
 Dunham Co., Thos., Aurora, Ill. (See page 145.)
 Enclosette—See Haines Mfg. Corp.
 Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill. "De Luxe."
 Faultless—See American Auto Top Co.
 Goldin Mfg. Co., 130-32 Marietta St., Atlanta, Ga.
 Gordon Co., J. P., 803 N. Fourth St., Columbus, O.
 Goshen Buggy Top Co., Goshen, Ind.
 Haines Mfg. Corp., Osburn House, Rochester, N. Y. "Enclosette." (See page 525.)
 Hodes-Zink Mfg. Co., 312 W. State St., Fremont, O. "Surefit."
 Holden One-Man Top Co., 1776 Broadway, New York, N. Y.
 Horstman Auto Top Co., 1938 Prospect Ave., Cleveland, O.
 Kaplan Specialty Co., 140 Halsey St., Newark, N. J.
 Koupet Auto Top Co., Belleville, Ill.
 Lamco—See Lehman Mfg. Co.
 Lehman Mfg. Co., 510 Fourth St., Canaan, Ind. "Lamco." (See page 145.)
 Liberty Top & Tire Co., 123 E. Eighth St., Cincinnati, O.
 Lockwood Mfg. Co., Kansas City, Mo.
 Longdin-Brugger Co., Second & Macy Sts., Fond du Lac, Wis.
 Miller Auto Top & Body Mfg. Co., Caro, Mich.
 Omaha Auto Top Co., Omaha, Neb. "Co-Zee." (See page 303.)
 Paco Mfg. Co., Franklin & Seventh Sts., Peoria, Ill.
 Penn Square Body Co., 5405 Euclid Ave., Cleveland, O.
 Perkins-Campbell Co., Cincinnati, O. (See page 299.)
 Powers Mfg. Co., Waterloo, Iowa. (See page 530.)
 R-E—See Roose Mfg. Co.
 Roose Mfg. Co., 827-33 W. Main St., Louisville, Ky. "R-E."
 Seaman Co., W. E., 486 Virginia St., Milwaukee, Wis.
 Springfield Harness Co., 55-59 Dwight St., Springfield, Mass.
 Sterling Top & Equipment Co., 518-22 W. 57th St., New York, N. Y.
 Streater Hearse & Body Co., 911 E. La Rue St., Streater, Ill. "Call-Ford."
 Surefit—See Hodes-Zink Mfg. Co.
 Tatco—See Thomas Auto Top Co.
 Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind. "Tatco."
 Tompson, N. W., 10 Scotia St., Boston, Mass. (New England Distributors for Anchor Tops.) (See page 161.)
 Unico—See Unit Construction Co.
 Ustus Products Co., 4042 W. Jefferson St., Detroit, Mich.
 Van Auken Co., South Blvd. & Grand Trunk R. R., Pontiac, Mich.

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ONE MAN TOPS

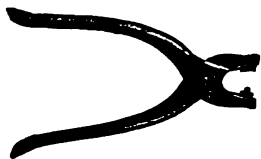
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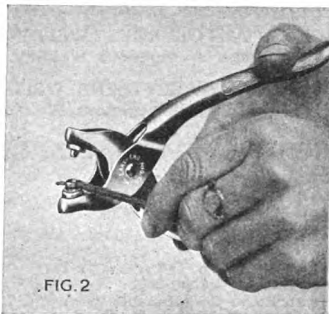
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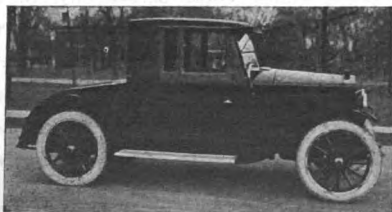
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Warner Woodworking Co., 234 Moss Ave., Highland Park, Mich.
 Weatherproof Body Corp., Corunna, Mich. (See page 185.)
 Weiss & Son, Chas., 4715-19 Cottage Grove Ave., Chicago, Ill.
 Western Auto Top Co., 1206-10 Jackson St., Omaha, Neb.
 Wilson—See Cincinnati Auto Specialty Co.

TORCHES, Acetylene Brazing and Welding

(Small torch to be attached to acetylene tank used for light brazing and welding.—For Oxy-Acetylene Torches—See Machines, Autogenous Welding)

Hicken Sod-Tor-Lite Co., B. B., Prairie Hill, Mo. "Sod-Tor-Lite."
 Prest-O-Lite Co., 30 E. 42d St., New York, N. Y.
 St. Paul Welding & Mfg. Co., 174 W. Third St., St. Paul, Minn. "Torit."
 Sod-Tor-Lite—See Hicken Sod-Tor-Lite Co.
 Torit—See St. Paul Welding & Mfg. Co.
 Washburn Burner Corp., Kokomo Dispatch Bldg., Kokomo, Ind.

TORCHES, AUTOGENOUS WELDING—See Machines, Autogenous Welding

TORCHES, OXY-ACETYLENE WELDING—See Machines, Autogenous Welding

TORCHES and FURNACES, Gasoline or Kerosene

Acme Sales Co., 527 Cumberland St., Westfield, N. J.
 Aeroll Burner Co., 266-70 Hudson Ave., Union Hill, N. J.
 American Stove Co. (Ringin Div.) 825 Chouteau Ave., St. Louis, Mo. "Vesuvius."
 American Stove Co. (Reliable Stove Co. Div.), E. 40th St. & Penna. R. R., Cleveland, O. "Reliable."
 Anthony Co., 138 West Ave., Long Island City, N. Y.
 Ashton Mfg. Co., 184 Emmet St., Newark, N. J. "Red-Hot."
 Barthel—See Globe Gas Light Co.
 Berns Co., Otto, 17 Ashland St., Newark, N. J.
 Bolte Mfg. Co., 126-34 E. Racine Ave., Chicago, Ill.
 Carleton Co., 70 Summer St., Boston, Mass.
 Clayton & Lambert Mfg. Co., 10507 Knodell Ave., Detroit, Mich. (See page 471.)
 Ever-Hot—See Products Corp.
 Fairbanks Co., New York, N. Y. (Sole Distributors for Hempy-Cooper Mfg. Co., Kansas City, Mo.) (See pages 491 to 494.)
 Globe Gas Light Co., 27 Union St., Boston, Mass. "Barthel."
 Handy Torch Co., 69 Genesee St., Utica, N. Y.
 Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.
 Hempy-Cooper Mfg. Co.—See Fairbanks Co.
 Imp—See Carleton Co.
 Khotal—See Otto Metal Goods Corp.
 Otto Metal Goods Corp., Wm. H., 401-07 St. Pauls Ave., Jersey City, N. J. "Khotal."
 Products Corp., 51 Lake St., Maywood, Ill. "Ever-Hot."
 Quadriga Mfg. Co., 213-21 W. Grand Ave., Chicago, Ill. "Walters."

Red-Hot—See Ashton Mfg. Co.
 Reliable—See American Stove Co.
 Turner Brass Works, Sycamore, Ill.
 Vesuvius—See American Stove Co.
 Volcano Torch & Mfg. Co., 237 E. 23d St., Erie, Pa.
 Wall Mfg. Supply Co., P., 730 Preble Ave., Pittsburgh, Pa.
 Walters—See Quadriga Mfg. Co.

TOTE BOXES—See Boxes, Sheet Metal

TOURING BASKETS—See Hampers, Touring

TOURING TENTS—See Tents, Touring

TOW BARS—See Ropes, Chains and Bars, Tow

TOW CHAINS—See Ropes, Chains and Bars, Tow

TOW HOOKS—See Hooks, Safety Tow

TOW ROPE SHOCK ABSORBERS—See Springs, Tow Rope

TOW ROPE SPRINGS—See Springs, Tow Rope

TOW ROPES—See Ropes, Chains and Bars, Tow

TRACTOR AUTOMATIC QUICK STOP HITCHES—See Hitches, Automatic Quick Stop Tractor

TRACTOR SPARK ARRESTERS—See Arresters, Tractor Spark

TRACTORS—See Section I

TRAFFIC SIGNALS—See Signals, Direction Indicating or Traffic

TRAILER AXLES—See Axles, Special Trailer

TRAILER BRAKE EQUALIZERS—See Equalizers, Trailer Brake

TRAILER CONNECTIONS—See Couplers, Trailer

TRAILER CONNECTORS—See Connectors, Trailer

TRAILER COUPLERS—See Couplers, Trailer

TRAILERS, Automobile and Truck

A T C—See Automotive Trailer Corp.
 Adams Trailer Corp., Garden City, N. Y. "Motorbungalow."
 American Truck & Trailer Corp., Stoddard Pl., Kankakee, Ill.
 Arcadia Trailer Corp., 21 Murray St., Newark, N. Y.
 Automotive Trailer Corp., 414½ E. Washington St., Springfield, Ill. "A T C."
 Auto Trailer Co., 1222 S. Central Ave., Los Angeles, Cal.
 Auto-Kamp Equipment Co., 2008 Sheridan Ave., Saginaw, Mich.
 B. M. P. C.—See B. P. Mfg. Co.
 B. P. Mfg. Co., Anderson, Ind. "B. M. P. C."

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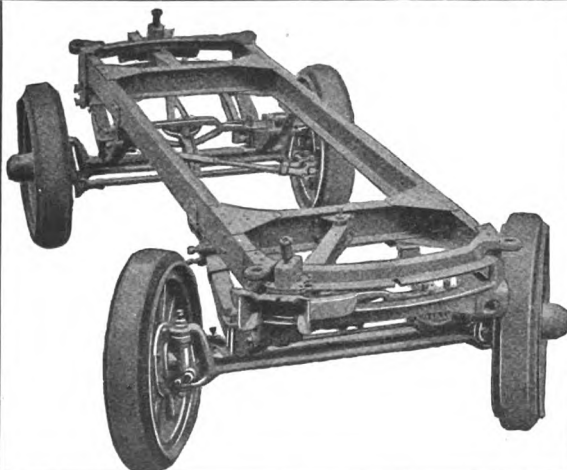
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- Bethlehem Motor Corp., 40 E. Walnut St., Allentown, Pa.
- Biggam Trailer Co., First Wisconsin National Bank Bldg., Milwaukee, Wis.
- Bower Mfg. Co., Fowler, Ind.
- Byron Engineering Works, 14th & Hill Sts., Louisville, Ky.
- Clare Mfg. Co., Clare, Mich.
- Continental Trailer Corp., 3625 Superior St., Detroit, Mich.
- Cook Motors Corp., Kankakee, Ill.
- Curtis Trailer Co., 413 W. Broadway, Minneapolis, Minn.
- Defiance Carriage Co., Perry & Gorman Sts., Defiance, O.
- Delker Co., George, Henderson, Ky.
- Detroit Trailer Co., 954 East Milwaukee Ave., Detroit, Mich. (See page 895.)
- Diamond Carriage Co., W. 118th St. & Second Ave., Spokane, Wash.
- E. & W. Mfg. Co., Cedarburg, Wis.
- Eagle Wagon Works, 45 S. Division St., Auburn, N. Y.
- Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill.
- Emerson-Brantingham Implement Co., S. Independence Ave., Rockford, Ill.
- Feigelson, Alex., 455 Crockett St., Beaumont, Tex.
- Fix Trailer Co., 1400 Cherry St., Detroit, Mich.
- Foreythe Mfg. Co., Third St. & Kentucky Ave., Joplin, Mo. "King Jack."
- Fruehauf Trailer Co., Harper Ave. & D. T. R. R., Detroit, Mich.
- General Woodwork Co., 1225-35 Budd St., Cincinnati, O. "Queen City."
- Glen Wagon & Car Corporation, Cortland, N. Y.
- Graves Co., L. C., Springboro, Pa.
- Heming Wagon Works, Meridian, Miss.
- Hercules Corp., Morton Ave., Evansville, Ind.
- Hesse Mfg. Co., Leavenworth, Kans. (See page 895.)
- Hewitt-Ludlow Auto Co., 901-51 Indiana St., San Francisco, Cal.
- Hi-Speed Trailercar Co. (East Rochester), Rochester, N. Y.
- Highway Trailer Co., Edgerton, Wis.
- Holland Trailer Co., 2031 First St., Detroit, Mich.
- Hoof Bros. Mfg. Co., Plato, Minn.
- Hummel Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for Highway Trailers.) (See page 143.)
- Jackson—See Miles Mfg. Co.
- King Jack—See Forsythe Mfg. Co.
- King Trailer Co., 635 S. Main St., Ann Arbor, Mich.
- Kleiber & Co., 11th & Folsom Sts., San Francisco, Cal.
- Lapeer Trailer Corp.—See Ryan, M. C.
- Laura, John P., 40 S. Monroe St., Coldwater, Mich.
- Lee Trailer & Body Co., 2333 S. La Salle St., Chicago, Ill. (See page 897.)
- Litehaul—See Puffer-Hubbard Mfg. Co.
- Lowell Cutter Co., Lowell, Mich.
- Lynch Mfg. Co., Hammond, Ind.
- Lyons, F. P., 1008 Elm St., Manchester, N. H.
- Martin-Perry Corp., W. Market St. & Highland Ave., York, Pa.
- Martin Rocking Fifth Wheel Co., Springfield, Mass. (See page 889.)
- Martin Truck & Body Corp., E. Market St. & Highland Ave., York, Pa.
- Marx, Geo. B., 192-206 Newell St., Brooklyn, N. Y.
- Miami Trailer Co., 406 E. Market St., Troy, O.
- Miles Mfg. Co., 351 S. Park St., Jackson, Mich. "Jackson."
- Motorbungaloo—See Adams Trailer Corp.
- Nepeessing Mfg. Corp., Lapeer, Mich.
- New Comer Co., D. A., 1135 Santa Fe Ave., Los Angeles, Cal.
- Oklahoma Auto Mfg. Co., Okay, Okla.
- Pacific Car & Foundry Co., Alaska Bldg., Seattle, Wash.
- Page Bros. Buggy Co., Marshall, Mich.
- Perfection Trailer & Mfg. Co., 1473 W. 110th St., Cleveland, O.
- Pike Automobile & Trailer Co., 317 Central Ave., Los Angeles, Cal.
- Puffer-Hubbard Mfg. Co., 26th St. & 32d Ave., S., Minneapolis, Minn. "Litehaul."
- Queen City—See General Woodwork Co.
- Ranger—See Southern Motor Mfg. Association.
- Reedy Auto Truck & Trailer Co., 19 E. Archer St., Tulsa, Okla.
- Reliance Trailer & Truck Co., 1642-64 Howard St., San Francisco, Cal.
- Rogers Bros. Co., Albion, Pa.
- Ryan, M. C., 2807 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Lapeer Trailer Corp., Lapeer, Mich.)
- Samson Trailer Works, 737 Bond Ave., N. W., Grand Rapids, Mich.
- Schaefer Wagon Co., Gustav, 4166-80 Lorain Ave., Cleveland, O.
- Shadboit Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.
- Shaver Carriage & Auto Co., E. Third & Locust Sts., Des Moines, Ia.
- Simplex Short Turn Trailer Co., Lago, Ind.
- Slor & Son, Heinrich, 245-47 Floyd St., Brooklyn, N. Y.
- Southern Motor Mfg. Association, Beauty Bldg., Houston, Tex. "Ranger."
- Springfield Commercial Body Co., 335 Liberty St., Springfield, Mass.
- Standard Trailer Co., 163 Grant St., Cambridge Springs, Pa.
- Stockbridge Body Co., 130 Union St., Springfield, Mass.
- Syracuse Mfg. Co., Syracuse, Ind.
- Texas Wagon Works, Houston, Tex.
- Timpte Bros., 2300 Walnut St., Denver, Colo.
- Trailer Truck Co., Nashotah, Wis.
- Trallmobile Co., 34th & Robertson Sts., Cincinnati, O.
- Troy Wagon Works Co., Troy, O.
- Utility Trailer Mfg. Co., 1328 Palmetto St., Los Angeles, Cal.
- Victor Motor Truck & Trailer Co., 401 N. Hoyle Ave., Chicago, Ill.
- W-A—See Whetstone & Co.
- Warner Mfg. Co., 31 Main St., Beloit, Wis.
- Watson Products Corp., Canastota, N. Y.
- Wentworth & Irwin, 200 Second St., Portland, Ore.
- Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."
- Wolverine Truck-Trailer Co., 119-23 Greeley St., Detroit, Mich.
- Zering Mfg. Co., H., 4437 Appleton St., Cincinnati, O.

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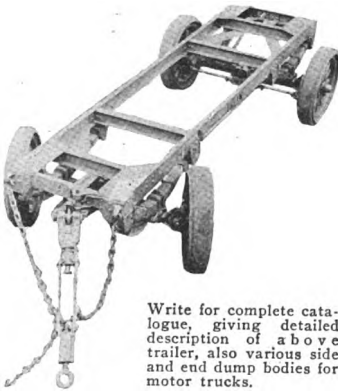
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Globe Decalcomanie Co., First St. & Sussex Ave., Newark, N. J.

Magnet—See Smith-Schiffelin Co.

Meyercoord Co., Chamber of Commerce Bldg., Chicago, Ill.

Motorists Accessories Co., Mansfield, O.

Novar—See Palm, Fechteler & Co.

Palm Bros. Co., 71 Murray St., New York, N. Y.

Palm, Fechteler & Co., 67 Fifth Ave., New York, N. Y. "Novar."

Smith-Schiffelin Co., 149 Church St., New York, N. Y. "Magnet."

TRANSMISSION ASSEMBLY CLAMPS—
See Clamps, Transmission Band Assembling

TRANSMISSION BAND ANTI-CHATTERERS FOR FORDS—See Anti-Chatterers, Transmission Band

TRANSMISSION BAND INSERTS FOR FORDS—See Inserts, Transmission Band

TRANSMISSION BAND LUGS FOR FORDS—
See Lugs, Transmission Band

**TRANSMISSION BAND SPRING COM-
PRESSING TOOLS FOR FORDS**—See
Tools, Transmission Band Spring Com-
pressing

**TRANSMISSION BAND SPRING CON-
NECTING TOOLS FOR FORDS**—See
Tools, Transmission Band Spring Con-
necting

TRANSMISSION BANDING FOR FORDS—
See Lining, Brake

TRANSMISSION BANDS FOR FORDS—
See Bands, Transmission

**TRANSMISSION BUSHING REAMERS FOR
FORDS**—See Reamers, Transmission
Bushing

**TRANSMISSION DRUM CLAMPS FOR
FORDS**—See Clamps, Transmission
Drum

**TRANSMISSION DRUM HOLDERS FOR
FORDS**—See Holders, Transmission Drum

**TRANSMISSION DRUM REPAIRING
CLAMPS FOR FORDS**—See Clamps or
Vises, Transmission Drum Repairing

**TRANSMISSION DRUM REPAIRING VISES
FOR FORDS**—See Clamps or Vises,
Transmission Drum Repairing

**TRANSMISSION DRUM STOCKS FOR
FORDS**—See Holders, Transmission Drum

TRANSMISSION FACINGS—See Lining,
Brake

TRANSMISSION GEAR BUSHINGS—See
Bushings, Bronze

TRANSMISSION GEARS—See Gears,
Transmission

TRANSMISSION LOCKS — See Locks,
Transmission

TRANSMISSION SHAFTS — See Shafts,
Transmission

TRANSMISSIONS—See Gears, Transmis-
sion

**TRANSMISSIONS, AUTOMATIC START-
ER**—See Gears, Automatic Starter Trans-
mission

TRANSMISSIONS, TRACTOR—See Gears,
Tractor Transmission

TRANSMITTING ATTACHMENTS—See
Attachments, Power Transmitting

TRAYS, ASH— See Receptacles, Ash
TREAD PEELING TOOLS—See Tools, Tire
Tread Rolling and Peeling

TREAD ROLLING TOOLS—See Tools, Tire
Tread Rolling and Peeling

TREAD STITCHING MACHINES—See
Machines, Double Tread Tire Stitching

TREADS OR PROTECTORS, De- tachable Tire

A D-O N-A-Tire—See Miller Rubber Co.

A. S. B.—See Queen Mfg. Co.

All-in-One—See General Tire & Rubber Co.

Bukolt Mfg. Co., Third St., Stevens Point,
Wis. "Highway."

Cummings Traction Tire, 1704 Common-
wealth Ave., Boston, Mass.

Durable—See Gates Rubber Co.

Ever Last Tread Co., 128 E. New York St.,
Indianapolis, Ind.

Gates Rubber Co., Broadway & Tennessee St.,
Denver, Colo. "Durable."

General Tire & Rubber Co., East Market St.,
Akron, O. "All-in-One."

Givens Consolidated Rubber Co., Second &
Howard Sts., San Francisco, Cal.

Highway—See Bukolt Mfg. Co.

Illinois Tire Co., First Nat'l Bank Bldg., Chi-
cago, Ill.

Kimball Tire Case Co., 163 Broadway, Council
Bluffs, Ia.

Liberty Auto Accessory Mfg. Works, 325
Michigan Ave., Jackson, Mich.
(See page 225.)

Maplebay Mfg. Co., Crookston, Minn.

Marvel Tire & Rubber Co., Syracuse, N. Y.

Miller, Chas. E., 1400 S. Meridian St., Ander-
son, Ind.

Miller Rubber Co., Akron, O. "A D-O N-A-
Tire."

Pacific—See Sturges Tire & Rubber Co.

Queen Mfg. Co., Webster City, Ia. "A. S. B."

Savold Tire Co., 5 Columbus Circle, New York,
N. Y.

Sturges Tire & Rubber Co., Oakland, Cal.
"Pacific."

Triple Tread Tire Co., 1442 Michigan Ave.,
Chicago, Ill.

Wearproof Tire Products Co., 554 Van Ness
Ave., San Francisco, Cal.

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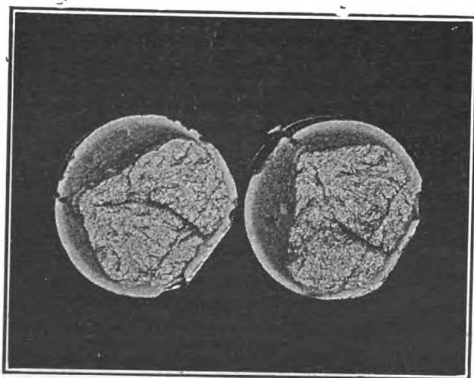


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TREATING COMPOUNDS—See Com-
pounds, Gasoline Treating**TREATING, Heat**

Alco Steel Co., Lincoln, N. J.
 American Die & Tool Co., Reading, Pa.
 (See page 420.)
 American Forge & Machine Co., 1850
 Barth Ave., Canton, O. (See page 385.)
 American Metal Treatment Co., Eliza-
 beth, N. J. (See page 899.)
 Beeman & Broughton Co., 454-58 21st St., De-
 troit, Mich.
 Brooklyn Steel Treating Corp., 8-10 Franklin
 St., Brooklyn, N. Y.
 Casey-Hudson Co., 361 E. Ohio St., Chi-
 cago, Ill. (See pages 607 and 741.)
 Detroit Heat Treating Co., 1701 Bellevue
 Ave., Detroit, Mich.
 Detroit Machine Tool Co., 6545 St. Antonio St.,
 Detroit, Mich.
 Dittmer Gear & Mfg. Corp., 290 Grand St.,
 Lockport, N. Y.
 Frasse & Co., Peter A., 417 Canal St.,
 New York, N. Y. (See page 819.)
 General Machine Works, Lamour & Prospect
 Sts., York, Pa.
 General Railway Signal Co., Rochester, N. Y.
 Hartford Machine Screw Co., Hartford,
 Conn. (See page 741.)
 Kettler-Elliott Co., 3153 S. California Ave.,
 Chicago, Ill.
 Keyless Lock Co., 1401 Newman St., Indian-
 apolis, Ind.
 Melsel Press Mfg. Co., 945 Dorchester
 Ave., Boston, Mass. (See page 423.)
 Milwaukee Heat Treating Co., 651-53 S.
 Pierce St., Milwaukee, Wis.
 Montgomery Chemical Works, Elmtree &
 Doremus Sts., Detroit, Mich.
 Myall-Wallace Co., 559-69 W. Lake St., Chi-
 cago, Ill.
 Peninsular Products Co., Detroit, Mich.
 (See page 629.)
 Reliable Chain & Tire Saver Co., 236 Francis
 St., Jackson, Mich.
 Sanford Mfg. Co., F. C., 2060 Fairfield Ave.,
 Bridgeport, Conn.
 Scott & Fitzer Machine Co., Locust Ave.,
 Cleveland, O.
 Snow Co., Fred. A., 1942 W. Kinzie St., Chi-
 cago, Ill.
 Steel Improvement & Forge Co., 5003 Windsor
 Ave., Cleveland, O.
 Turner Novelty Co., John C., Dayton, O.
 Vincent Steel Process Co., 1131 Bellevue Ave.,
 Detroit, Mich.
 Wesley Steel Treating Co., 651-53 S. Pierce
 St., Milwaukee, Wis.
 Williams & Co., J. H., 88 Richards St.,
 Brooklyn, N. Y. (See page 903.)
 Wyman-Gordon, Worcester, Mass.
 (See Back Bone.)

TRESTLES AND TRUCKS—See Horses,
Trestles and Trucks**TRIMMERS, BATTERY POST—See Tools,**
Storage Battery Repair**TRIMMERS' CLIPS—See Clips, Trimmers'****TRIMMERS' PASTE—See Paste, Trimmers'****TRIMMINGS, Cloth and Carpet**

(See also Broadcloth, also Buttons; also Carpet; also
 Cloth; also Lace; also Linoleum; also Silk;
 also Whipcord)

Albrecht Co., H. M., 1834 Broadway, New
 York, N. Y.
 Barrell Co. of New York, Wm. L., 50 Leonard
 St., New York, N. Y.
 Bradford Fabrics Co., 1753-55 Broadway,
 New York, N. Y. (See page 165.)
 Bridgeport Coach Lace Co., 813 Wood
 Ave., Bridgeport, Conn. (See page 305.)
 Carr Co., F. S., 31 Beach St., Boston, Mass.
 Chase & Co., L. C., 89 Franklin St., Boston,
 Mass.
 Duncan Co., W. H., 70-72 Worth St., New
 York, N. Y.
 Dusenbury & Co., Louis, 229 Fourth Ave.,
 New York, N. Y. (See page 899.)
 Galland, Wechmar & Co., 466 Fourth Ave.,
 New York, N. Y.
 Haarts, J. C., 10 High St., Boston, Mass.
 Ialdlaw Co., 18 W. 60th St., New York,
 N. Y. (See pages 259 and 273.)
 Landers Bros. Co., Dept. A3, Toledo, O.
 (See page 263.)
 Midland Fabrics Co., 228 W. 58th St., New
 York, N. Y. (See page 303.)
 Patterson & Greenough, 45 E. 17th St., New
 York, N. Y.
 Roehm & Davison, 353 W. Woodbridge St.,
 Detroit, Mich.
 Scherer & Co., H., 440 E. Jefferson Ave., De-
 troit, Mich.
 Schlegel Mfg. Co., 377 N. Goodman St.,
 Rochester, N. Y.
 Sherwood, A. S., 363 W. 54th St., New York,
 N. Y.
 Shirley Corp., 250 W. 54th St., New York,
 N. Y. "Wearwell."
 Sloane, W. & J., 575 Fifth Ave., New York,
 N. Y. (See pages 105, 517 and 535.)
 Strong Textile Co., 245 W. 55th St., New
 York, N. Y. (See page 257.)
 Ten Eick, Cornelius, 253 W. 47th St., New
 York, N. Y. (Distributor.)
 (See page 81.)
 Thurblis—See Thurnauer & Co.
 Thurnauer & Co., J. C., 354 Fourth Ave., New
 York, N. Y. "Thurblis."
 Tiel & Co., Geo., 1236 Race St., Philadelphia,
 Pa.
 Warden Co., Geo. J., 6520-34 Carnegie Ave.,
 Cleveland, O.
 Wearwell—See Shirley Corp.
 Wiese & Co., Wm., 234 W. 56th St., New York,
 N. Y.
 Worumb Co., 334 Fourth Ave., New York,
 N. Y.

TRIMMINGS, Metal

(See also Fasteners, Curtains; also Fittings, Top; also
 Forgings, Drop; also Handles, Door; also Hinges,
 Door; also Locks, Door; also Irons, Flat; also
 Irons, Body; also Mouldings, Brass; also Reels,
 Bow; also Separators, Bow)

Aetna Brass & Bronze Co., 1631-35 E. 65th
 St., Cleveland, O.
 Amesbury Brass & Foundry Co., Amesbury,
 Mass.
 Attwood Brass Works, Grand Rapids,
 Mich. (See page 147.)
 Cowles & Co., C., New Haven, Conn.
 (See page 451.)

Everything is listed under the NOUN or principal word



SOCKET WRENCHES

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**DEMOUNTABLE RIM WRENCHES
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**SAN FRANCISCO
457 MONADNOCK BLDG.**

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TRIMMINGS, Metal (Continued)

Douglas & Lomason Co., 5836 Lincoln Ave., Detroit, Mich.
 English & Mersick Co., New Haven, Conn. (See page 539.)
 Enterprise Brass & Plating Co., Sixth & Baymiller Sts., Cincinnati, O.
 Imperial Brass Mfg. Co., 1224 W. Harrison St., Chicago, Ill. (See page 173.)
 Monarch Carriage Goods Co., Marshall & Spring Grove Ave., Cincinnati, O. (See page 929.)
 Phoenix Lock Works, 321-27 Third Ave., Newark, N. J.
 Sherwood, A. S., 253 W. 54th St., New York, N. Y.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)
 White Mfg. Co., 155 Cannon St., Bridgeport, Conn.
 Wing Co., Charles, Amesbury, Mass. (See page 799.)
 Woodruff & Sons Co., Walter W., Mount Carmel, Conn.

TRIPLE GEAR RIVETING JIGS FOR FORDS—See Jigs, Triple Gear Riveting

TROUBLE CHARTS—See Charts, Electric Wiring

TROUBLE LIGHTS—See Lamps, Electric, Hand or Inspection

TRUCK ATTACHMENTS—See Converters, Chassis

TRUCK BODY GATE FASTENERS—See Fasteners, Truck Body Gate

TRUCK BODY HOISTS—See Hoists, Truck Body

TRUCK BODY SUPPORTS—See Supports, Truck Body

TRUCK CABS—See Cabs, Wood Truck; also Cabs, Metal Truck

TRUCK CONVERTERS—See Converters, Chassis

TRUCK CRANES—See Cranes, Truck

TRUCK GUARDS—See Fenders or Guards, Truck Radiator

TRUCK LOAD INDICATING METERS—See Meters, Truck Load Indicating

TRUCK LOADERS—See Loaders, Truck

TRUCK RIM APPLYING PRESSES—See Presses, Truck Rim Applying

TRUCK STAKE POCKETS—See Pockets, Truck Stake

TRUCK STAKE SOCKETS—See Pockets, Truck Stake

TRUCK UNITS—See Converters, Chassis

TRUCK WINCHES—See Winches, Truck

TRUCKS, Acetylene and Oxygen Tank

Dayton Display Fixture & Novelty Co., 712-14 E. Monument Ave., Dayton, O. "Presto."
 Pioneer Welding Co., 610 E. Main St., Kalamazoo, Mich.
 Presto—See Dayton Display Fixture & Novelty Co.

TRUCKS, Body Handling

Equipment Mfg. Co., Warren, O. "Farming-ton."
 Farmington—See Equipment Mfg. Co.
 Globe Vise & Truck Co., 1451 Front Ave. N. W., Grand Rapids, Mich.

TRUCKS, Car Unloading for Fords

(Truck to facilitate unloading Ford cars from box cars)

Will-Burt Co., Orville, O.

TRUCKS, CASTORS and SPARE WHEELS, Wrecking

(For towing in cars with damaged wheels or axles)

Bihler—See Omaha Steel Works.
 Compo Mfg. Co., Defiance, O.
 Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)
 E. & S.—See Manley Mfg. Co.
 Echo Motor Co., Tonawanda, N. Y.
 Guss Co., O. G., Delphos, O.
 Holmes & Bros., Robt., 30 N. Hazel Ave., Danville, Ill.
 Holmes Co., Ernest, Chattanooga, Tenn.
 Kimkin—See Kimmerle Bros.
 Kimmerle Bros., 683 Golden Gate Ave., San Francisco, Cal. "Kimkin."
 Lawson—See Menasha Wood Split Pulley Co.
 Manley Mfg. Co., York, Pa. "E. & S." (See page 661.)
 Mascop—See Milwaukee Auto Specialty Co.
 Menasha Wood Split Pulley Co., 674 Tayco St., Menasha, Wis. "Lawson."
 Mid-West Mfg. Co., McKnight Bldg., Minneapolis, Minn. "Red Devil."
 Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Mascop."
 Mosher Mfg. Co., 13 E. 57th St., Chicago, Ill.
 Omaha Steel Works, 48th & Leavenworth Sts., Omaha, Neb. "Bihler."
 Projects Co., East Milton, Mass.
 Red Devil—See Mid-West Mfg. Co.
 Rochester Auto Ambulance Co., 719 Exchange St., Rochester, N. Y.
 Simplicity Products Mfg. Co., Milwaukee, Wis.
 Weaver Mfg. Co., 2177-79 S. Ninth St., Springfield, Ill. (See page 661.)

TRUCKS, GARAGE WHEEL—See Castors and Wheel Trucks

TRUCKS, OXYGEN TANK—See Trucks, Acetylene and Oxygen Tank

TRUNK RACKS—See Racks, Trunk

TRUNK STRAPS—See Straps, Leather; also Straps, Web

TRUNKS, BOARD—See Trunks, Leather

TRUNKS, FABRIC—See Trunks, Leather

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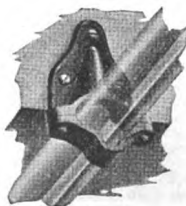
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Ajax Trunk & Sample Case Co., 420 W. 125th St., New York, N. Y.
 Bailey-Fitwell Co., 1318 S. Grand Ave., Los Angeles, Cal. "Fitwell."
 Belber Trunk & Bag Co., 1641 N. Hancock St., Philadelphia, Pa.
 Berg Auto Trunk & Specialty Co., 400 Lafayette St., New York, N. Y.
 Farmers Market Co., 711 Orange St., Wilmington, Del.
 Fitwell—See Bailey-Fitwell Co.
 Kamlee—See McKane-Lins Co.
 Kronauer & Co., Chas., 153 N. Desplaines St., Chicago, Ill.
 Likly & Rockett Trunk Co., 1365 Euclid Ave., Cleveland, O.
 McDonald, Alexander, 15 Beacon St., Boston, Mass.
 McKane-Lins Co., Milwaukee, Wis. "Kamlee." (See page 903.)
 Sage's Trunk & Leather Goods Co., 10 Washington St., N., Boston, Mass.
 Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.
 Stalman, F. A., 57 E. Spring St., Columbus, O.
 Taylor Trunk Works, C. A., 678 N. Halsted St., Chicago, Ill.
 Tuttle & Clark, 33 E. Jefferson St., Detroit, Mich.
 United Auto Trunk Co., W. 26th St., New York, N. Y.
 Winship, W. W., 71 Summer St., Boston, Mass.

TRUNKS, Metal

Warnock & Co., Wm., Sioux City, Ia.

TRUNKS, TIRE—See Trunks, Leather; also Trunks, Metal

TRUSS RODS FOR FORDS—See Ends, Rear Axle Truss

TRUSSES, REAR AXLE, FOR FORDS—See Rods, Rear Axle Truss

TUBE BAGS—See Covers, Spare Tire

TUBE CASES—See Covers, Spare Tire

TUBE DEFLATORS—See Machine, Tube Deflating and Valve Removing

TUBE EXPANDERS—See Expanders, Boiler

TUBE MANDRELS—See Mandrels, Inner Tube

TUBE PATCHES—See Patches, Tire Repair

TUBE PATCHING BUFFERS—See Buffers, Tube Patching

TUBE SPLICING MANDREL CLAMPS—See Clamps, Tube Splicing Mandrel

TUBE TESTING TANKS—See Tanks, Inner Tube Testing

TUBE VALVES, OIL FOR FORDS—See Valves, Oil Tube

TUBES, Inner

(For Outer Casings or Shoes—See Tires, Pneumatic)

Achilles Rubber & Tire Co., Binghamton, N. Y.
 Acme Rubber Mfg. Co., Trenton, N. J.
 Air Container Co., 859 Boylston St., Boston, Mass.
 Ajax Rubber Co., 220 W. 57th St., New York, N. Y. (See page 871.)
 Allen Tire & Rubber Co., 510 Hamilton St., Allentown, Pa.
 Allsteel Ridewell Tire & Rubber Co., Dayton, O. "Artyr." (See page 87.)
 Amazon Rubber Co., Akron, O.
 Ambassador Tire Corp., 927 Eighth Ave., New York, N. Y. (Distributors.) (See page 841.)
 American—See Mansfield Tire & Rubber Co.
 American Auto Accessories Co., 333 S. Michigan Ave., Chicago, Ill. "Brown."
 American Rubber & Tire Co., 100 Beech St., Akron, O.
 Anchor—See New Jersey Car Spring & Rubber Co.
 Apollo Tire & Rubber Co., 3962 E. 93rd St., Cleveland, O.
 Arabian—See Defiance Tire Factories.
 Archer Cord Tire & Rubber Co., 711-17 15th Ave., N. E., Minneapolis, Minn.
 Ardmore-Akron Tire & Rubber Co., Herskowitz Bldg., Oklahoma City, Okla.
 Armstrong Rubber Co., Garfield, N. J.
 Artyr—See Allsteel Ridewell Tire & Rubber Co.
 Ashland Tire & Rubber Co., Clark Ave. & E. Eighth St., Ashland, O. "Stalwart."
 Auburn—See Double Fabric Tire Co.
 Auto-Seal—See Shaw Tire Co.
 Auto Tire Sales Co., 1346-48 Michigan Ave., Chicago, Ill. "Lyon."
 Axiom—See Surety Tire & Rubber Co.
 Batavia Rubber Co., Batavia, N. Y.
 Beacon Tire Co., Main & River Sts., Beacon, N. Y.
 Bergen Rubber Co., 40-42 Paterson Ave., East Rutherford, N. J.
 Bergougnan Rubber Corp., 2000 E. State St., Trenton, N. J.
 Best—See Veghte, Harry V.
 Big J—See Jefferson Rubber Co.
 Biltwell Tire & Rubber Co., Akron, O.
 Black Hawk Tire & Rubber Co., 2020 E. Walnut St., Des Moines, Ia.
 Black Stripe—See Rubber Products Corp.
 Blekre Tire & Rubber Co., St. Paul, Minn. (See page 872.)
 Boska—See Standard Tire Filler Co.
 Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.
 Bowling Green Rubber Co., 1203 Prospect Ave., Toledo, O.
 Braender Rubber & Tire Co., Rutherford, N. J.
 Briction Mfg. Co., 14th & Farnum Sts., Omaha, Neb.
 Broadway Tire Jobbers, Inc., 254 W. 54th St., New York, N. Y. (Dealers.) (See page 864.)
 Brown—See American Auto Accessories Co.
 Brunswick-Balke-Collender Co., 623-33 S. Wabash Ave., Chicago, Ill.
 Buckskin—See Tuscan Tire & Rubber Co.
 Bucyrus—See Henderson Tire & Rubber Co.
 Burdick Tire & Rubber Co., Noblesville, Ind.
 C C C—See Canton Rubber Works.
 Canton-Blackstone Co., Canton, O.
 Canton Rubber Works, 209 Washington St., Canton, Mass. "C C C."
 Carlisle Tire & Rubber Co., Carlisle, Pa. "Car-mojon."

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TUBES, Inner (Continued)

- Carmojon—See Carlisle Tire & Rubber Co.
 Carapring—See New Jersey Car Spring & Rubber Co.
 Century-Plainfield Tire Co., Plainfield, N. J.
 Century Rubber Works, 1346 Rawson St., Cicero, Ill.
 Channon Co., H., 150 N. Market St., Chicago, Ill. "Gripwell."
 Chester Rubber Tire & Tube Co., Chester, W. Va.
 Chicago Rubber Clothing Co., 1501 Albert St., Racine, Wis. "O'Claire."
 Cleveland Rubber Corp. Co., Berea Road & W. 114th St., Cleveland, O.
 Climax Rubber Co., 21 W. Gay St., Columbus, O. "Maxo." (See page 833.)
 Clingstone—See Lancaster Tire & Rubber Co.
 Coast Tire & Rubber Co., 48th Ave. & 12th St., Oakland, Cal.
 Collins Puncture-Proof Tube Co., Banta Pl., Hackensack, N. J.
 Columbia Tire & Rubber Co., Mansfield, O. "Para-Bell."
 Columbus Tire & Rubber Co., 555 W. Goodale St., Columbus, O.
 Combination Rubber Mfg. Co., Bloomfield, N. J. "Eagle."
 Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalis."
 Converse Rubber Shoe Co., Edgeworth St., Malden, Mass. "Tuff-E-Nuff."
 Converse Rubber Shoe Co., Malden, Mass. "Tuff-E-Nuff."
 Cooper—See Giant Tire & Rubber Co.
 Corduroy—See Grand Rapids Tire & Rubber Corp.
 Cornhusker—See Nebraska Tire & Rubber Co.
 Corona Cord Tire Co. (E. Butler), Butler, Pa. "Coronada."
 Corona Rubber Mfg. Co., Rittenhouse & Osceola Sts., Philadelphia, Pa.
 Coronada—See Corona Cord Tire Co.
 Crown Tire & Rubber Co., Ralston, Neb.
 Cumberland Tire & Rubber Co., 26th & Courtney Sts., Louisville, Ky.
 Cupples Co., Seventh & Spruce Sts., St. Louis, Mo. "Rhinos."
 Currie Bros. Co., Grand Bldg., Atlanta, Ga. "Tiresometer."
 Defiance Tire Factories, 426 Randolph St., Chicago, Ill. "Arabian."
 Dellon Tire & Rubber Co., Baltimore, Md.
 De Luxe—See Thermoid Rubber Co.
 Diamond Holdfast Rubber Co., 33 Auburn Ave., Atlanta, Ga. "Holdfast."
 Diamond Rubber Co., Akron, O.
 Doss Rubber & Tube Co., Murphy Ave., Atlanta, Ga.
 Double Fabric Tire Co., 50 W. Ninth St., Auburn, Ind. "Auburn."
 Dowse Rubber Co., 123 S. Michigan Ave., Chicago, Ill.
 Doyle Tire & Rubber Co., 124 S. Main St., Akron, O.
 Dry Climate Tire Mfg. Co., Arvada, Colo. "Yadacol."
 Dryden Rubber Co., 1014 S. Kildare St., Chicago, Ill.
 Dunlop Tire & Rubber Corp. of America, Buffalo, N. Y. (See page 873.)
 Dural Rubber Corp., Flemington, N. J. (See page 849.)
 Eagle—See Combination Rubber Mfg. Co.
 Eakie Rubber Co., Bloomfield, N. J.
 Eckrode Rubber Co., 118-22 Adams St., Newark, N. J.
 Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (New Jersey Distributors for Vulco Tubes.) (See page 495.)
 Empire Tire & Rubber Co., Mulberry St. & Clinton Ave., Trenton, N. J.
 Erie Tire & Rubber Co., First St., Sandusky, O.
 Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.
 Eternal—See Midland Tire & Rubber Co.
 Evergreen—See Falls Rubber Co.
 Excel Rubber Co., 116 Broad St., Wadsworth, O. "X-L."
 Falls Rubber Co., Cuyahoga Falls, O. "Evergreen."
 Falor Mfg. Co., 126 W. South St., Akron, O.
 Federal Rubber Co. (Cudahy), Milwaukee, Wis.
 Firestone Tire & Rubber Co., Miller & Sweetzer Aves., Akron, O.
 Fisk Rubber Co. of New York, Chicopee Falls, Mass. (See page 869.)
 Forster Tire & Rubber Co., Millersburg, O.
 G & J Tire Co., Indianapolis, Ind.
 Gates Rubber Co., Broadway & Tennessee St., Denver, Colo. "Vulco."
 General Tire & Rubber Co., 330 N. 15th St., Philadelphia, Pa.
 General Tire & Rubber Co., E. Market St., Akron, O.
 Giant Tire & Rubber Co., Lima St., & Western Ave., Findlay, O. "Cooper."
 Gillette Rubber Co., Eau Claire, Wis.
 Globe Rubber Tire Mfg. Co., Trenton, N. J.
 Goodrich Co., B. F., S. Main St., Akron, O.
 Goodyear Tire & Rubber Co., Akron, O.
 Gordon Tire & Rubber Co., 1200 Seventh St., S. W., Canton, O.
 Grand Rapids Tire & Rubber Corp., Pearl & Ottawa Sts., Grand Rapids, Mich. "Corduroy."
 Grande—See Republic Rubber Co.
 Great Republic Tire & Rubber Mfg. Co., Equity Bldg., Muskogee, Okla. "Sequoyale."
 Greyhound—See Ideal Tire & Rubber Co.
 Gripwell—See Channon Co.
 Guage Valve Corp., 217-27 Lake Erie St., Rochester, Ind.
 Hamilton Rubber Mfg. Co., Mead & Prince Sts., Trenton, N. J.
 Handy—See United States Leatheroid & Rubber Co.
 Hanes Rubber Co., Winston-Salem, N. C.
 Hardman Rubber Corp., New Brunswick, N. J. "Stanwood."
 Hardware Tire Corp. (East Rutherford), Rutherford, N. J.
 Hartford Rubber Works Co., 1792 Broadway, New York, N. Y.
 Hartford Rubber Works Co., Hartford, Conn.
 Hawkeye Tire & Rubber Co., 215 E. Third St., Des Moines, Ia.
 Henderson Tire & Rubber Co., 40 Exchange Pl., New York, N. Y. "Bucyrus."
 Hercules Rubber Corp., 922 Race St., Cincinnati, O.
 Hewitt Rubber Co., 240 Kensington Ave., Buffalo, N. Y.
 Holdfast—See Diamond Holdfast Rubber Co.
 Home Tire Co., Trenton, N. J.
 Hood Rubber Products Co., Bigelow Ave., Watertown, Mass.
 Horseshoe—See Racine Auto Tire Co.
 Howe Rubber Corp., Codwise Ave., New Brunswick, N. J.
 Ideal—See Voorhees Rubber Mfg. Co.
 Ideal Tire & Rubber Co., 1615 Euclid Ave., Cleveland, O. "Greyhound."
 Independent Airless Tire Co., Cottage & Pacific Sts., Independence, Mo.
 India Tire & Rubber Co., Akron, O.
 Inland Rubber Co., 146 W. 27th St., Chicago, Ill.

Everything is listed under the NOUN or principal word

TUBES, Inner (Continued)

Iowa Cord Tire Co., Fleming Bldg., Des Moines, Ia.
 Jasper Tire & Rubber Co., 320 Main St., Jasper, Ind.
 Jefferson Rubber Co., Jefferson, Wis. "Big J."
 Johnstone Tire & Rubber Co., La Porte, Ind.
 Jordan Tire & Rubber Co., Mallers Bldg., Chicago, Ill. (Dealers.) (See page 864.)
 KelBro—See Kelley Tire Co.
 Kelley Tire Co., Drexel Bldg., Philadelphia, Pa. "KelBro."
 Kelley Tire & Rubber Co., West Haven, Conn.
 Kenyon Co., C., 764 Pacific St., Brooklyn, N. Y.
 Keystone Rubber Mfg. Co., 135 E. 11th St., Erie, Pa. "Moomey."
 Keystone Tire & Rubber Co., Broadway & 62nd St., New York, N. Y. (See page 865.)
 Knox Tire & Rubber Co., Mt. Vernon, O.
 Knabenshue Mfg. Co., East Northport, N. Y.
 Kokomo Rubber Co., 111 S. Main St., Kokomo, Ind. "Long-Life."
 Lagonda Rubber Co., East Palestine, O.
 Lancaster Tire & Rubber Co., Long & Fourth Sts., Columbus, O. "Clingstone."
 Last-Wel—See Twin Tube & Rubber Co.
 Latex Tire & Rubber Co., E. Scott St., Fond du Lac, Wis.
 Lee Tire & Rubber Co., 245 W. 55th St., New York, N. Y. "Velvet."
 Lehigh Tire & Rubber Co., Newcastle, Pa.
 Liberty Tire & Rubber Co., Green Bay, Wis.
 Lincoln Highway Tire Co., Fulton, Ill.
 Lion Tire & Rubber Corp., E. Union Street, Lafayette, Ind. "Lioness."
 Lloness—See Lion Tire & Rubber Corp.
 London Rubber Co., 906 Forbes St., Pittsburgh, Pa. "Red Devil."
 Long-Life—See Kokomo Rubber Co.
 Long-Wear—See Quality Tire & Rubber Co.
 Lyon—See Auto Tire Sales Co.
 M B—See Middle States Rubber Co.
 McCreary Tire & Rubber Co., 15th & School Sts., Indiana, Pa.
 McGraw Tire & Rubber Co., 4810 Prospect Ave., Cleveland, O.
 McLean Tire & Rubber Co., East Liverpool, O.
 Majestic Tire & Rubber Co., Cruise & Daly Sts., Indianapolis, Ind.
 Malay Rubber Co., 1035 Guardian Bldg., Cleveland, O. (See page 864.)
 Malco Tire & Rubber Co., 30th & Chestnut Sts., Philadelphia, Pa.
 Mansfield Tire & Rubber Co., Newman St., Mansfield, O. "American," "United," "Ohio."
 Marathon Tire & Rubber Co., Cuyahoga Falls, O.
 Martin Tire & Rubber Co., 1656 Broadway, New York, N. Y.
 Mason Tire & Rubber Co., 803 Lake St., Kent, O.
 Maxo—See Climax Rubber Co.
 Mercer Rubber Co., Hamilton Square, N. J.
 Meyer Rubber Co., Columbiana, O.
 Michelin Tire Co., Milltown, N. J.
 Mid-Continental Tire Mfg. Co., 13th St., Rock Island & Wabash Aves., Wichita, Kans. "Midco."
 Mid-West Tire Mfg. Co., Grandview Ave., Arvada, Colo.
 Midco—See Mid-Continental Tire Mfg. Co.
 Midco—See Zenith Tire & Rubber Co.
 Middle States Rubber Co., Painesville, O. "M. S."
 Middletown Rubber Co., 80-84 Washington St., Middletown, N. Y.
 Midland Tire & Rubber Co., Cambridge Rd., Coshocton, O. "Eternal," "Rainbow."

Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Miller Rubber Co., Akron, O.
 Mississippi Valley Rubber Co., Market & Linn Sts., Iowa City, Ia.
 Mohawk Rubber Co., E. Market St., Akron, O.
 Montford Rubber Co., 854 Main St., Buffalo, N. Y. "Red Racer."
 Moomey—See Keystone Rubber Mfg. Co.
 Mutual Tire & Rubber Co., 6 E. 39th St., New York, N. Y.
 Naco—See National Motor Accessories Corp.
 Nassau—See Thermold Rubber Co.
 National Rubber Products Corp., Tenth St. & Columbia Ave., Philadelphia, Pa.
 National Tire Co., Broad St. Bank Bldg., Trenton, N. J.
 National Tire & Rubber Co., East Palestine, O. "Olympian," "Remington," "Roamer."
 Naugatuck Tire & Rubber Co., 888 Eighth Ave., New York, N. Y. (Dealers.) (See page 873.)
 Nebraska Tire & Rubber Co., 3167-77 Spaulding St., Omaha, Neb. "Cornhusker."
 Neverout—See Rose Mfg. Co.
 New Jersey Car Spring & Rubber Co., Wayne & Brunswick Sts., Jersey City, N. J. "Car-spring," "Anchor."
 No Ceem Rubber Corp., 105 Harrison Ave., Harrison, N. J.
 Norwalk Tire & Rubber Co. (Winnipauk), Norwalk, Conn.
 O'Claire—See Chicago Rubber Clothing Co.
 Odell Rubber Co., Ewing Ave. & Vandalla R. R., South Bend, Ind.
 Ohio—See Mansfield Tire & Rubber Co.
 Ohio Guaranty Tire & Rubber Co., 5510 Euclid Ave., Cleveland, O. "Tuscan." (Distributors.) (See page 873.)
 Oldfield Tire Co., Akron, O.
 Olympian—See National Tire & Rubber Co.
 Overland Tire & Rubber Co., 30th & Taylor Sts., Omaha, Neb.
 Owen Tire & Rubber Co., 2336 Euclid Ave., Cleveland, O.
 Para-Bell—See Columbia Tire & Rubber Co.
 Paramold—See Pharis Tire & Rubber Co.
 Paul Rubber Co., Salisbury, S. C.
 Pennsylvania Rubber Co. of America, Jeanette, Pa.
 Perfection Tube Co., Painesville, O. "Mon-arch."
 Perry Auto Lock Co., 2635 Michigan Ave., Chicago, Ill. (See page 545.)
 Pharis Tire & Rubber Co., Newark, O. "Paramold." (See page 873.)
 Plexus Tire & Rubber Co., Tacony, Pa. "Tuf."
 Portage Rubber Co., Barborton, O.
 Portage Tire & Rubber Co., Akron, O.
 Powertown Tire Corp., Rochester, N. Y.
 Prudential Tire & Rubber Co., 8 S. Dearborn St., Chicago, Ill.
 Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.
 Quality Tire & Rubber Co., 24th & Walton Sts., Anderson, Ind. "Long-Wear."
 Racine Auto Tire Co., 1215 State St., Racine, Wis. "Hornshoe."
 Racine Rubber Co., Racine, Wis. (See page 867.)
 Rainbow—See Midland Tire & Rubber Co.
 Ramo Tire & Rubber Co., Standard Life Bldg., Pittsburgh, Pa.
 Red Devil—See London Rubber Co.
 Red Racer—See Montford Rubber Co.
 Reliance Tire & Rubber Corp., Manchester Ave., Keyport, N. J.
 Remington—See National Tire & Rubber Co.

Everything is listed under the NOUN or principal word

TUBES, Inner (Continued)

- Republic Rubber Co., Albert St., Youngstown, Ohio. "Grande."
- Reserve—See Western Reserve Tire Corp.
- Rhinos—See Cupples Co.
- Roamer—See National Tire & Rubber Co.
- Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."
- Rotary Tire & Rubber Co., Zanesville, O.
- Rubber Products Co., Fifth & Brady Sts., Barberton, O. "Stronghold."
- Rubber Products Corp., Shelton, Conn. "Black Stripes."
- S. H. Rubber Mfg. Co., 1834 Broadway, New York, N. Y. "Winner."
- Samson Tire & Rubber Corp., 333 W. Pico St., Los Angeles, Cal.
- Savage—See Spreckels-Savage Tire Co.
- Schavoir Rubber Co., Lee St., Stamford, Conn.
- Sealtite—See Victory Rubber Mfg. Co.
- Security Tire & Rubber Co., Wellington, O.
- Semco—See Semple Rubber Co.
- Semple Rubber Co., 112 Murray St., Trenton, N. J. "Semco."
- Sequayale—See Great Republic Tire & Rubber Mfg. Co.
- Service Rubber Co., 2615 Walnut St., Kansas City, Mo.
- Shaw Tire Co., Old South Bldg., Boston, Mass. "Auto-Seal."
- Sherman—See Stevenson Tire & Rubber Co., Elks Bldg., Scittdale, Pa.
- Silver King—See Sponge Tire & Rubber Co.
- Sloux City Tire & Mfg. Co., Fifth & Plymouth Sts., Sloux City, Ia.
- Sound—See Western Rubber Co.
- Southern Tire & Rubber Co., 9 Central Park W., New York, N. Y.
- Spencer Co., W. E., 1 Park Pl., New York, N. Y. "Vulpa."
- Sponge Tire & Rubber Co., W. Third St., Red Wing, Minn. "Silver King."
- Sprague Tire & Rubber Co., 18th & Izard Sts., Omaha, Neb.
- Spreckels-Savage Tire Co., Main & Sicard Sts., San Diego, Cal. "Savage."
- Stalwart—See Ashland Tire & Rubber Co.
- Standard Four Tire Co., Keokuk, Ia.
- Standard Tire Co., Willoughby, O.
- Standard Tire Filler Co., 1400 Broadway, New York, N. Y. "Boska."
- Stanwood—See Hardman Rubber Corp.
- Star Rubber Co., 1073 Crozier St., Akron, O.
- Sterling Tire Corp., Rutherford, N. J.
- Stronghold—See Rubber Products Co.
- Sturdy Tire & Rubber Co., 17-35 Perrine Ave., Trenton, N. J.
- Sturges Tire & Rubber Co., Oakland, Cal. "V. K."
- Surety Tire & Rubber Co., St. Louis, Mo. "Axiom." (See page 872.)
- Swinehart Tire & Rubber Co., North & Howard Sts., Akron, O.
- Syracuse Rubber Co., Syracuse, N. Y.
- Terrill Tire & Rubber Co., Clinton, Mo.
- Thermoid Rubber Co., Trenton, N. J. "De Luxe," "Nassau." (See page 531.)
- Tireometer—See Currie Bros. Co.
- Tolliver Tube & Tire Co., 3100 Downing St., Denver, Colo.
- Trautwein Corp., 585-87 Manhattan Ave., Brooklyn, N. Y.
- Traveler Tire & Rubber Co. of Bethlehem, Traveler Ave. & Auburn St., Philadelphia, Pa.
- Triumph Tire & Rubber Co., Manley, Mount & Nelson Sts., Long Island City, N. Y. (Dealers.) (See page 872.)
- Tru-matic Tire & Tube Co., 207 W. 76th St., New York, N. Y.
- Tuf—See Plexus Tire & Rubber Co.
- Tuff-B-Nuff—See Converse Rubber Shoe Co.
- Tulsa—See U. S. Compression Inner Tube Co.
- Tuscan—See Ohio Guaranty Tire & Rubber Co.
- Tuscan Tire & Rubber Co., Carrollton, O. "Buckskin."
- Twin Tube & Rubber Co., 1002 S. Michigan Ave., Chicago, Ill. "Last-Wel."
- Tyer Rubber Co., Andover, Mass. "Tyrian."
- Tyrian—See Tyer Rubber Co.
- U. S. Compression Inner Tube Co., Tulsa, Okla. "Tulsa."
- United—See Mansfield Tire & Rubber Co.
- United States Leatheroid & Rubber Co., Lowell St., Reading, Mass. "Handy."
- United States Tire Co., 1700 Broadway, New York, N. Y. (See page 863.)
- Universal Rubber Products Co., Zellenople, Pa. "Zest."
- V. K.—See Sturges Tire & Rubber Co.
- Vadacol—See Dry Climate Tire Mfg. Co.
- Veghte, Harry V., 799 Seventh Ave., New York, N. Y. "Best."
- Velvet—See Lee Tire & Rubber Co.
- Victor Rubber Co., Springfield, O. (See page 872.)
- Victory Rubber Mfg. Co., 259 Peachtree St., Atlanta, Ga. "Sealtite."
- Viking—See Voorhees Rubber Mfg. Co.
- Vitallo—See Continental Rubber Works.
- Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J. "Viking," "Ideal."
- Vulcan Rubber Co., Erie, Pa.
- Vulco—See Gates Rubber Co.
- Vulweld Rubber Co., Pottstown, Pa.
- Vulpa—See Spencer Co.
- Wenstone Rubber Products Co., 3025 Indiana Ave., Chicago, Ill.
- Western Reserve Tire Corp., Cleveland, O. "Reserve."
- Western Rubber Co., 6200 S. Union Ave., Tacoma, Wash. "Sound."
- Wilson Tire & Rubber Co., Harvard Park, Springfield, Ill.
- Winner—See S. H. Rubber Mfg. Co.
- Wood Tire & Rubber Co., 25th Ave. & 14th St., Gulfport, Miss.
- Wyoming Tire & Rubber Co., 814-16 Coal Exchange Bldg., Wilkes-Barre, Pa.
- X-L—See Excel Rubber Co.
- Yale Tire & Rubber Co., 1003 Dixwell Ave., New Haven, Conn.
- Zenith Tire & Rubber Co., Leader-News Bldg., Cleveland, O. "Midco."
- Zest—See Universal Rubber Products Co.

TUBES, MICA—See Mica**TUBES, Non-Explosive Tank Filling**

- Kessler—See Non-Explosive Can & Tube Co.
- Non-Explosive Can & Tube Co., 137-29 8 Green St., Chicago, Ill. "Kessler."

TUBES, PORCELAIN—See Porcelain**TUBES, Speaking**

(For Limousine Telephones—See Telephones, Limousine; for Annunciators—See Annunciators)

- Bridgeport Coach Lace Co., 818 Wood Ave., Bridgeport, Conn. (See page 305.)
- Cowles & Co., New Haven, Conn. (See page 451.)
- English & Merrick Co., New Haven, Conn. (See page 539.)

Everything is listed under the NOUN or principal word

TUBES, Speaking (Continued)

Norwalk Mfg. Co. (East Norwalk), Norwalk, Conn.
 Schlegel Mfg. Co., 277 N. Goodman St., Rochester, N. Y.
 Taylor Co., H. D., 99-115 Oak St., Buffalo, N. Y.

TUBES, WIRING—See Manifolds, Wiring

TUBING, Aluminum

Aluminum Co. of America, Oliver Bldg., Pittsburgh, Pa.
 Ivins Tube Works, Ellwood, Oak Lane Station, Philadelphia, Pa.

TUBING, Brass and Copper

American Brass Co. (Kenosha Branch), Kenosha, Wis.
 American Brass Co., Waterbury, Conn. (See page 161.)
 Baltimore Tube Co., 1301 Wicomico St., Baltimore, Md.
 Bridgeport Brass Co., Bridgeport, Conn.
 Chase Rolling Mill Co., Grand St., Waterbury, Conn.
 Claussen Tube Works, J. H., 25 Day St., Brooklyn, N. Y.
 Continuous Rolling Mills of the Continuous Casting Corp., Garwood, N. J.
 Cornells & Gridley, Wolcott St., Waterbury, Conn.
 Dallas Brass & Copper Co., 225 N. Jefferson St., Chicago, Ill.
 Detroit Copper & Brass Rolling Mills, Clark Ave. below Wabash R. R., Detroit, Mich.
 Erie-Buffalo Tube Co., 18th & Cranberry Sts., Erie, Pa.
 Freeman Brass Works, 92 Bowery, New York, N. Y.
 French Mfg. Co., 149 Robbins St., Waterbury, Conn.
 Mackenzie-Walton Co., 476 Pawtucket Ave., Pawtucket, R. I.
 Michigan Copper & Brass Co., 5851 W. Jefferson Ave., Detroit, Mich. "Wolverine."
 Mohican Brass & Copper Works, 107 Liberty St., New York, N. Y.
 National Co., 57 N. Main St., Waterbury, Conn.
 National Brass & Copper Tube Co., 41 Park Row, New York, N. Y.
 National Copper & Smelting Co., 1895 Coltman Rd., Cleveland, O.
 New Jersey Tube Co., Kingsland Ave., Harrison, N. J.
 Randolph-Clowes Co., 384 Bank St., Waterbury, Conn.
 Roberts Tube Works, 2500 Military Ave., Detroit, Mich.
 Rome Brass & Copper Co., E. Dominick St., Rome, N. Y.
 Rome Hollow Wire & Tube Co., Railroad St., Rome, N. Y.
 Standard Brass & Copper Tube Co., Woodbridge & Division Sts., New London, Conn.
 Standard Metalwork Co., Thompsonville, Conn.
 U. S. Copper Products Corp., 3511 Ridge Road, Cleveland, O.
 Uniform Seamless Wire Co., 71 Peck St., Providence, R. I.
 United Wire & Supply Co., 1497 Elmwood Ave., Providence, R. I.
 Waterbury Mfg. Co., 236 Grand St., Waterbury, Conn.
 Wells & Co., A. H., 561 Watertown Ave., Waterbury, Conn.
 Wolverine—See Michigan Copper & Brass Co.
 Wolverine Tube Co., 1411-51 Central Ave., Detroit, Mich. (See page 923.)

TUBING, BRASS IRON-LINED—See Tubing, Iron-Lined

TUBING CONNECTIONS — See Unions, Tubing

TUBING, COPPER—See Tubing, Brass and Copper

TUBING, FIBRE—See Fibre, Hard

TUBING, FLEXIBLE CONTROL — See Cable, Flexible Control

TUBING, Flexible Metallic

(For oil or gasoline piping, speedometer shaft covering, wire covering, exhaust piping, carburetor hot air pipes, etc.)

Almond Mfg. Co., T. K., 1 Maple Ave., Ashburnham, Mass.
 American Metal Hose Co., Waterbury, Conn. (See page 287.)
 American Metal Moulding Co., 141 N. J. Railroad Ave., Newark, N. J.
 Arrow Flexible Conduit Co., 210-12 Canal St., New York, N. Y.
 Atlantic Tubing Co., 1756 Cranston St., Providence, R. I.
 Auto-Steelflex—See National Metal Molding Co.
 Breeze Metal Hose Mfg. Co., 250-52 South St., Newark, N. J. "Flex-X-met."
 Chicago Tubing & Braiding Co., 216-24 N. Clinton St., Chicago, Ill. "Rex."
 Coates Clipper Mfg. Co., 337 Chandler St., Worcester, Mass.
 Crane Packing Co., 1800 Cuyler Ave., Chicago, Ill.
 Dewes Co., A., 199 Lafayette St., New York, N. Y.
 Duoflex—See Fischer Spring Co.
 Federal Metal Hose Corp., 45 N. Division St., Buffalo, N. Y.
 Fischer Spring Co., Chas., 83-90 Walker St., New York, N. Y. "Duoflex."
 Flex-X-met—See Breeze Mfg. Co.
 Flexible Armored Hose Co., 763 Main St., Buffalo, N. Y.
 International Metal Hose Co., Harvard & E. 103rd St., Cleveland, O.
 Klick Tubing & Braiding Co., 328-32 N. Randolph St., Philadelphia, Pa.
 Lombard Motor Car Co., 67-71 Minerva St., Derby, Conn.
 Metal Hose & Tubing Co., 230 Tillary St., Brooklyn, N. Y. "Triplexd." (See page 475.)
 Mulconroy Co., 54th & Jefferson Sts., Philadelphia, Pa.
 National Metal Molding Co., Pittsburgh, Pa. "Auto-Steelflex." (See page 453.)
 Pennflex—See Pennsylvania Flexible Metallic Tubing Co.
 Pennsylvania Flexible Metallic Tubing Co., Broad & Race Sts., Philadelphia, Pa. "Pennflex."
 Pipe & Tube Bending Corp. of America, 24 Grafton Ave., Newark, N. J.
 Rex—See Chicago Tubing & Braiding Co.
 Safety-Armorite Conduit Co., Bailey-Farrell Bldg., Pittsburgh, Pa.
 Standard Metal Mfg. Co., 237 Chestnut St., Newark, N. J.
 Steelflex—See National Metal Molding Co.
 Titeflex Metal Hose Corp., Badger Ave. & Runyon St., Newark, N. J. (See page 909.)
 Triplexd—See Metal Hose & Tubing Co.
 United Metal Hose Co., 523 W. 23d St., New York, N. Y.
 U. S. Flexible Metallic Tubing Co., Boyd & Omar Sts., Los Angeles, Cal.
 Whalen Co., John, 85 Purchase St., Boston, Mass.

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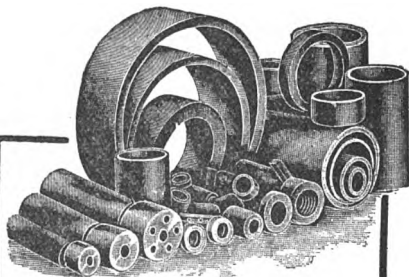


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TUBING, HARD RUBBER—See Rubber, Hard**TUBING, Iron-Lined Brass**

American Brass Co., Waterbury, Conn.
(See page 161.)

Phenix Tube Co., Warren, O.

Rome Mfg. Co., Railroad St., Rome, N. Y.

TUBING, RUBBER—See Tubing, Soft Rubber; also Rubber, Hard**TUBING, Soft Rubber**

Acme Rubber Mfg. Co., Trenton, N. J.

Alpha—See Parker, Stearns & Co.

Atlantic Tubing Co., 1756 Cranston St., Providence, R. I.

Boston Belting Co., 84 Linden Park St., Boston, Mass.

Boston Woven Hose & Rubber Co., 110 Portland St., Cambridge, Mass. "Bull Dog."

Bowers Rubber Works, 68-70 Sacramento St., San Francisco, Cal.

Bull Dog—See Boston Woven Hose & Rubber Co.

Canfield Rubber Co., Bridgeport, Conn.

Cincinnati Rubber Mfg. Co., Cincinnati, O. "Royal." (See page 475.)

Combination Rubber Mfg. Co., Bloomfield, N. J.
Continental Rubber Works, 1902 Liberty St., Erie, Pa. "Vitalic."

Dural Rubber Corp., Flemington, N. J.
(See page 349.)

Empire Tire & Rubber Co., Mulberry St. & Clinton Ave., Trenton, N. J.

Essex Rubber Co., May & Bleakes Sts., Trenton, N. J.

Federal Rubber Co. (Cudahy), Milwaukee, Wis.

Firestone Tire & Rubber Co., Miller & Sweitzer Aves., Akron, O.

Goodrich Co., B. F., S. Main St., Akron, O.
Indiana Rubber & Insulated Wire Co., Jonesboro, Ind.

Industrial Rubber Goods Co., Broad St., St. Joseph, Mich. (See page 835.)

Latex Tire & Rubber Co., E. Scott St., Fond du Lac, Wis.

Mechanical Rubber Co., 307 W. Randolph St., Chicago, Ill. "Usco."

Mechanical Rubber Co., C. & P. & Nickel Plate R. R., Cleveland, O.

Milford Rubber Works, Milford, Ill.

Miller Rubber Co., Akron, O.

National India Rubber Co., Bristol, R. I.

New Jersey Car Spring & Rubber Co., Wayne & Brunswick Sts., Jersey City, N. J.

New York Belting & Packing Co., 91 Chambers St., New York, N. Y.

Norwalk Mfg. Co. (East Norwalk), Norwalk, Conn.

Parker, Stearns & Co., 286 Sheffield Ave., Brooklyn, N. Y. "Alpha."

Pennsylvania Rubber Co. of America, Jeanette, Pa.

Plexus Tire & Rubber Co., Tacony, Pa.

Quaker City Rubber Co., 629 Market St., Philadelphia, Pa.

Royal—See Cincinnati Rubber Mfg. Co.

Thermoid Rubber Co., Trenton, N. J.
(See page 531.)

United States Tire Co., 1790 Broadway, New York, N. Y. (See page 803.)

Usco—See Mechanical Rubber Co.

Vitalio—See Continental Rubber Works.

Voorhees Rubber Mfg. Co., 20-56 Bostwick Ave., Jersey City, N. J.

TUBING, Steel

American Metal Products Co., 6431-61 Epworth Blvd., Detroit, Mich.
(See page 913.)

American Steel Tube Co., Buckeye St., Terminal R. R., Toledo, O.

American Tube Co., 3704 S. Rockwell St., Chicago, Ill.

American Tube & Stamping Co., 411 Hancock Ave., Bridgeport, Conn.

Bordentown Steel & Tube Corp., Bordentown, N. J.

Connecticut Tubing Co., 556 Capitol Ave., Hartford, Conn.

Dahlstrom Metallic Door Co., E. Second & Buffalo Sts., Jamestown, N. Y.

Delaware Seamless Tube Co., Auburn, Pa.

Detroit Seamless Steel Tubes Co., W. Warren Ave. & Wyoming St., Detroit, Mich.

Elisco—See Elyria Iron & Steel Co.

Elyria Iron & Steel Co., Cleveland, O. "Elisco." (See page 913.)

Emco—See Excello Mfg. Co.

Empire Tube & Steel Corp., Second Ave. & 11th St., College Point, N. Y.

Empire Tube & Steel Corp., College Point, N. Y.

Excello Mfg. Co., 923 Westminster St., Providence, R. I. "Emco."

Fiat Metal Mfg. Co., 217-23 W. Huron St., Chicago, Ill.

Frasse & Co., Peter A., 417 Canal St., New York, N. Y. (Eastern Distributors for "Shelby Tubing.") (See page 819.)

Globe Seamless Steel Tubes Co., 33rd Ave. & Burnham St., Milwaukee, Wis.

Ivins Tube Works, Ellwood, Oak Lane Station, Philadelphia, Pa.

Kawneer Mfg. Co., 931 Front St., Niles, Mich.

Michigan Steel Tool Products Co., Buffalo St., Detroit, Mich. (See page 913.)

Mohegan Tube Co., 306 Scott Ave., Brooklyn, N. Y.

Morris & Co., E. K., 811-17 W. Second St., Cincinnati, O. (Dealers.)
(See page 909.)

National Tube Co., Frick Bldg., Pittsburgh, Pa. "Shelby."

Newark Tube & Metal Works, 560 Ferry St., Newark, N. J.

Ohio Seamless Tube Co., Shelby, O.
(See page 911.)

Ohio Steel Products Co., Mineral Ridge, O.

Perfection Metal Products Co., College Point, N. Y.

Pittsburgh Steel Products Co., Union Arcade, Pittsburgh, Pa.

Rome Mfg. Co., Railroad St., Rome, N. Y.

Shelby—See National Tube Co.

Standard Metalwork Co., Thompsonville, Conn.

Standard Steel Tube Co., Toledo, O.

(See Inside Front Cover.)

Standard Welding Co., Cleveland, O. "Stanweld."

Stanweld—See Standard Welding Co.

Toledo Steel Tube Co., 2115 Smead Ave., Toledo, O.

Tube Products Co., 2699 Guoin St., Detroit, Mich.

Ward's Sons Co., Edgar T., 44 Farnsworth St., Boston, Mass. (Eastern Distributors for Pittsburgh Tubing.)

TUBING UNIONS—See Unions, Tubing**TUBULAR BOILERS—See Boilers, Steam****TUBULAR RIVETS—See Rivets, Tubular and Clinch**

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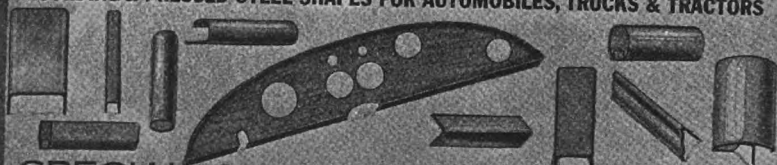
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TUFTING MACHINES—See Machines, Upholstery

TUFTING TWINE—See Twine, Tufting

TURN-BUCKLES, Wrought

American Forging Co., 2700-98 N. 24th St., Birmingham, Ala.

Clapp Mfg. Co., E. D., 305 W. Genesee St., Auburn, N. Y.

Cleveland Hardware Co., 4500 Hamilton Ave., Cleveland, O.

Columbus Bolt Works Co., Columbus, O. (See page 147.)

Eberhard Mfg. Co., 2734 Tennyson Rd., Cleveland, O.

Haskell Mfg. Co., Wm. H., 24 Commerce St., Pawtucket, R. I.

Merrill Bros., 3 Arnold St., Maspeth, N. Y.

Michigan Bolt & Nut Co., ft. Meldrum Ave., Detroit, Mich.

New England Bolt & Steel Co., Bowdoin St. (Everett), Boston, Mass.

Peninsular Products Co., Detroit, Mich. (See page 629.)

Universal Specialty Co., 1405-07 S. Seventh St., St. Louis, Mo.

Wilcox, Crittenden & Co., 2 S. Main St., Middletown, Conn.

TURNERS, SPRING EYE—See Tools, Spring Eye Forming

TURNING ATTACHMENTS—See Attachments, Lathe Crankshaft Turning

TURNTABLES, Automobile

(See also Couters and Wheel Trucks)

Bicycle Step Ladder Co., 6 W. Randolph St., Chicago, Ill. "Murray."

Canton Foundry & Machine Co., Thrd St. & Savannah Ave., S. E., Canton, O.

Ernst's Sons, C. F., 75 Lathrop St., Buffalo, N. Y.

Garage Engineering & Equipment Co., National Transit Bldg., Oil City, Pa.

Lansing Co., Lansing, Mich.

Link-Belt Co., Indianapolis, Ind. (See page 233.)

Murray—See Bicycle Step Ladder Co.

Nicola & Bro., George P., Old Colony Bldg., Chicago, Ill.

Perfection—See Zering Mfg. Co.

Pitless Auto Turntable Co., Traders Bldg., Kansas City, Mo.

Portland Garage Co., 49-51 Cross St., Portland, Me.

Rochester Iron Works, Powers Bldg., Rochester, N. Y.

Smith Iron Co., G. W. & F., Gerard St., Boston, Mass.

Turner Machine Co., 28 Maple Ave., Danbury, Conn.

United Casting Co., Wilson & Violet Sts., Los Angeles, Cal.

Zering Mfg. Co., H., 4437 Appleton St., Cincinnati, O. "Perfection."

TURNTABLES, Storage Battery

(To eliminate the lifting of heavy batteries when repairing or overhauling them)

Ambu—See American Bureau of Engineering.

American Bureau of Engineering, 1600 S. Michigan Ave., Chicago, Ill. "Ambu." (See page 147.)

Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)

Cowle Electric Co., E. S. Kansas City, Mo. (See page 481.)

TURRET LATHES—See Lathes, Turret

TWINE, Tufting

Travers Twine & Cordage Co., 81 Warren St., New York, N. Y.

TWIST DRILLS—See Drills, Twist

TWISTERS, RADIATOR FIN FOR FORDS

—See Tools, Radiators Fin Straightening

TWO WAY COCKS—See Valves, Two Way Tank

TWO WAY VALVES—See Valves, Two Way Tank

UNDER BONNETS—See Pans, Dust

UNDERSLUNG FITTINGS FOR FORDS—See Fittings, Car Lowering

UNIONS, PIPE—See Fittings, Pipe

UNIONS, Tubing

(Compression or solderless and soldering fittings, including unions, tees, elbows, etc., for connecting small size brass and copper tubing—for oil and gasoline lines, etc.)

Aetna Brass & Bronze Co., 1631-35 E. 55th St., Cleveland, O.

American Brass Products Co., Pottstown, Pa.

Commonwealth Brass Corp., 6781 Commonwealth Ave., Detroit, Mich.

Detroit Brass Works, 99 Hobart St., Detroit, Mich.

Detroit Brass & Malleable Works, 1177 Holden Ave., Detroit, Mich.

Dole Valve Co., 1923 Carroll Ave., Chicago, Ill.

Dohner—See Ohio Metal Products Co.

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)

Greer, Fredric, 2437 Michigan Ave., Chicago, Ill.

Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O.

McRae & Roberts Co., 100-116 S. Campbell Ave., Detroit, Mich.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

Newton Mfg. Co., Plainville, Conn. (See page 315.)

Ohio Metal Products Co., Dayton, O. "Dohner."

Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.

Richardson-Phenix Co., 122-28 Reservoir Ave., Milwaukee, Wis. "Union Clinch."

Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.

Union Clinch—See Richardson-Phenix Co.

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill.

(See page 471.)

Williams Valve Co., D T., Spring Grove Ave. & Township St., Cincinnati, O.

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- UNIVERSAL JOINT COVERS—See Boots, Steering Knuckle
- UNIVERSAL JOINT DISCS—See Discs, Universal Joint
- UNIVERSAL JOINTS — See Joints, Universal
- UNLOADING TRUCKS FOR FORDS—See Trucks, Car Unloading
- UPHOLSTERY BINDINGS—See Bindings, Upholstery
- UPHOLSTERY BROADCLOTH — See Broadcloth
- UPHOLSTERY BUTTON MACHINES—See Machines, Upholstery Button
- UPHOLSTERY BUTTONS—See Buttons, Upholstery
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- UPHOLSTERY CLEANERS—See Cleaners, Upholstery
- UPHOLSTERY CLOTH—See Cloth; also Broadcloth; also Silk; also Whipcord
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- UPHOLSTERY FABRICS—See Cloth; also Broadcloth; also Silk; also Whipcord
- UPHOLSTERY FELT—See Felt, Upholstery
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- UPHOLSTERY LEATHER—See Leather, Artificial; also Leather, Natural
- UPHOLSTERY MACHINES—See Machines, Upholstery
- UPHOLSTERY MOSS—See Moss, Upholstery
- UPHOLSTERY NAILS—See Tacks, Upholstery
- UPHOLSTERY SILK—See Silk, Upholstery
- UPHOLSTERY SPRINGS — See Springs, Seat
- UPHOLSTERY TACKS—See Tacks, Upholstery
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- UPHOLSTERY TUFTING MACHINES—See Machines, Upholstery Tufting
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- VALVE CAP GASKETS FOR FORDS—See Gaskets, Cylinder Head
- VALVE CAP WRENCHES—See Wrenches, Valve Cap
- VALVE DUST CAPS—See Caps, Tire Valve Dust
- VALVE END SQUARING BLOCKS—See Blocks, Valve End Squaring
- VALVE FACING MACHINES—See Machines, Valve Seating and Facing
- VALVE GRINDERS—See Tools, Valve Grinding
- VALVE GRINDING COMPOUNDS—See Compounds, Valve Grinding
- VALVE GRINDING MACHINES—See Machines, Valve grinding
- VALVE GRINDING TOOLS—See Tools, Valve Grinding
- VALVE LIFT RODS—See Rods, Adjustable Valve Lift
- VALVE LIFTERS—See Rods, Adjustable Valve Lift
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- VALVE REMOVING TOOLS—See Tools, Valve Lifting and Spring Compressing
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VALVE SILENCERS—See Silencers, Overhead Valve

VALVE SPRING LIFTING TOOLS—See Tools, Valve Spring Lifting and Compressing

VALVE SPRINGS—See Springs, Machinery

VALVE SPRINGS FOR FORDS—See Springs, Engine Valve

VALVE STEM ADJUSTERS FOR FORDS—See Adjusters, Valve Stem

VALVE STEM PINS FOR FORDS—See Pins, Valve Stem

VALVE STEM SEALS—See Seals, Valve Stem

VALVE TAPPETS—See Rods, Adjustable Valve Lift

VALVE TOOLS, TIRE—See Tools, Tire Valve Retreading

VALVE TURNING TOOLS—See Tools, Valve Seating

VALVES, AIR—See Connections, Air System Tire; also Valves, Tire

VALVES, AUTOMATIC ENGINE STOPS—See Stops, Automatic Engine

VALVES, AUXILIARY AIR—See Mixers, Fuel

VALVES, Ball Check

(Small ball check valves with tubing connections; see also Unions, Tubing)

Detroit Brass & Malleable Works, 1177 Holden Ave., Detroit, Mich.

Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)

Lunkenheimer Co., Beekman & Tremont Sts., Cincinnati, O.

Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, CUT-OUT—See Valves, Muffler Cut-Out

VALVES, Engine Check

Monarch Valve Co., 111 Front St., Brooklyn, N. Y.

VALVES, Engine Poppet

(For Valves in the rough—See Forgings, Drop)

Ban-Rov & Co., 1230 S. Wood St., Chicago, Ill.
Birrell Silent Motor Co., 645 Washington Blvd., Chicago, Ill. "Flexy."

Chicago Laminated Valve Co., 230 E. Ohio St., Chicago, Ill.

Coful Auto Parts Co., National City Bank Bldg., Cleveland, O. (Manufacturers' Agents.) (See page 509.)

De Luxe Specialty Co., 176 Brookline Ave., Boston, Mass. (Maine, New Hampshire, Vermont, Massachusetts and Rhode Island Distributors for "Flex-edge" Valves.) (See page 729.)

Drake & Sons, J. A., Reedley, Cal. "Jadson's."

Driver-Harris Co., Harrison, N. J.
Dunham Co., Thos., Aurora, Ill. (See page 145.)

Eastern Electric Co., Hanover, Pa.
Efemco—See Foster, Merriam & Co.

Fansteel Products Co., North Chicago, Ill. (See page 909.)

Farran-Kinney Co., 7 S. Dearborn St., Chicago, Ill. "S. Q. S." (See page 113.)

Flexedge—See Self-Seating Valve Co.

Flexy—See Birrell Silent Motor Co.

Ford-Clark Co., 1125 Perkins Ave., Cleveland, O.

Foster, Merriam & Co., Meriden, Conn. "Efemco." (See page 711.)

Hyklas—See Parts Service Co.

Jadson's—See Drake & Sons.

Metzger Welding Co., 1652 Powers St., Cincinnati, O.

Michigan Engine Valve Co., 115-17 Columbia St., W., Detroit, Mich. (See page 919.)

National Steel Products Co., 2270 Franklin St., Detroit, Mich.

Parts Service Co., 9307-11 Hough Ave., Cleveland, O. "Hyklas." (See page 149.)

Rich Tool Co., Railway Exchange Bldg., Chicago, Ill. (See page 1058.)

S. Q. S.—See Farran-Kinney Co.

Schlieder Mfg. Co., Detroit, Mich. (See page 923.)

Self-Seating Valve Co., 340 W. Huron St., Chicago, Ill. "Flexedge."

Steel Products Co., Cleveland, O. (See page 915.)

Super Valve Mfg. Co., 2620 W. 48th St., Chicago, Ill.

Toledo Steel Products Co., Toledo, O.

Triangle Steel Products Co., Michigan City, Ind.

U. S. Manufacturers Sales Corp., 2110-12 Michigan Ave., Chicago, Ill. (Dealers.) (See page 639.)

Walker-Welder, 3974 14th Ave., Detroit, Mich.

Wilcox Motor Parts & Mfg. Co., Saginaw, Mich. (See page 917.)

VALVES, Engine Poppet, for Fords

Acme Mfg. Co., Boonton, N. J.

Canton, Co. A. S., 174 Franklin St., New York, N. Y.

Drake & Sons, J. A., Reedley, Cal. "Jadson's."

Ford-Clark Co., 1125 Perkins Ave., Cleveland, O.

Hill-Smith Metal Goods Co., 82 Brookline Ave., Boston, Mass.

Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.

Jadson's—See Drake & Sons.

Metzger Welding Co., 1652 Powers St., Cincinnati, O.

Michigan Engine Valve Co., 115-17 Columbia St., W., Detroit, Mich. (See page 919.)

Morgan Mfg. Co., Court St., Keene, N. H. (See page 675.)

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.

U. S. Metal Goods Co., 5211 Euclid Ave., Cleveland, O.

Whitehouse Mfg. Co., E. A., 42-54 Elm St., Newark, N. J. (See page 174.)

Wilcox Motor Parts & Mfg. Co., Saginaw, Mich. (See page 917.)

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BRISCOE

Wilcox No.	Car Manufacturers Part No.	Models Used on	Years Used	DIMENSIONS	List Price
V-80	Valve, Inl. 34203	34	1910-20	1 1/2" dia. Head—3/4" dia. Stem—6 1/2" long over all	\$.65
V-81	Valve, Exh. 34209	34	1910-20	1 1/2" dia. Head—3/4" dia. Stem—6 1/2" long over all	.75
T-80	Tappet, 34055	34	1910-20	1 1/2" dia. Head—3/4" dia. Stem—2 1/2" long over all	.95
P-80	Piston Pin, 34212	34	1910-20	1" dia. x 2 1/2" long over all	.40

DODGE

V-10	Valve, 196 Inl. & Exh.	All	All	1 1/2" dia. Head—3/4" dia. Stem—6 1/2" long over all	.34
P-10	Piston Pin, A262	All	All	.8125" dia. x 3 1/4" long	.18

ELGIN

V110	Valve, S-125 Inl. & Exh.	All	1917-20 Inc.	1 1/2" dia. Head—3/4" dia. Stem—4 1/2" long over all	.50
T110	Tappet, H8061	All	1910-20	5/8" dia.—2 1/2" long over all	.40
P110	Piston Pin, H-8053	All	1910-20	.739" dia.—2 1/2" long over all	.28

ESSEX

V-22	Valve, Exh. 5447	All	All	2 1/2" dia. Head—370 dia. Stem—6 1/2" long over all	1.00
V-21	Valve, Exh. 50008	All	All	1 1/2" dia. Head—3/4" dia. Stem—6 1/2" long over all	1.00
P-20	Piston Pin, 50118	All	All	.874 dia. x 2 3/4" long	.52

FORD

V-90	Valve, Inl. & Exh. 3052	T	All	1 1/2" dia. Head—3/4" dia. Stem—5 1/2" long over all	.15
Oversize	Valve, Inl. & Exh. 3052	T	All	1 1/2" dia. Head—3/4" dia. Stem—5 1/2" long over all	.20
P-90	Piston Pin, 3022	T	All	.740" dia. Stem—3 1/2" long over all	.20

HUDSON

P-30	Piston Pin, 13093	Super-Six	1917-20 Inc.	1 1/2" dia. x 3 1/4" long	.40
V-30	Valve, Inl. & Exh. 13041	Super-Six	1917-21 Inc.	1 1/2" dia. Head—3/4" dia. Stem—6 1/2" long over all	.90
V-31	Valve, Inl. & Exh. 7126	6-40	1914-16 Inc.	1 1/2" dia. Head—3/4" dia. Stem—6 1/2" long over all	.85

HUPMOBILE

V-100	Valve, 45159 Inl. & Exh.	R1-R2-R3	1918-19-20	1 1/2" dia. Head—367 dia. Stem—5 1/2" long over all	.80
T-100	Tappet, 40109	R1-R2-R3	1918-19-20	1 1/2" dia. Head—3/4" dia. Stem—3 1/2" long over all	.65
P-100	Piston Pin, 45152-B	R1-R2-R3	1918-19-20	.865 dia. x 2 1/2" long over all	.32

MAXWELL

V-70	Valve, 5003 Inl. & Exh.	All	1914-20 Inc.	1 1/2" dia. Head—3/4" dia. Stem—4 1/2" long over all	.55
T-70	Tappet, 5066	All	1914-20 Inc.	1 1/2" dia. Head—3/4" dia. Stem—2" long over all	.40
P-70	Piston Pin, 599	All	1914-20 Inc.	.750" dia. x 3 1/4" long	.30

OVERLAND

V-43	Valve, Inl. 19391	75A-75B	1916-1917	1 1/2" dia. Head—3/4" dia. Stem—8 1/2" long ov. all	1.25
V-43	Valve, Exh. 14193	75A-75B	1916-1917	2" dia. Head—3/4" dia. Stem—8 1/2" long ov. all	1.25
V-44	Valve, Inl. 19382	90	1917-20 Inc.	1 1/2" dia. Head—3/4" dia. Stem—6 1/2" long over all	.77
V-44	Valve, Exh. 19383	90	1917-20 Inc.	1 1/2" dia. Head—3/4" dia. Stem—6 1/2" long over all	.77
V-41	Valve, Inl. & Exh. 13592	50, 69, 79, 81, 83, 85	1912-18 Inc.	1 1/2" dia. Head—3/4" dia. Stem—5 1/2" long over all	.80
V-42	Valve, Inl. & Exh. 300323	4	1919-1920	1 1/2" dia. Head—3/4" dia. Stem—4 1/2" long over all	.75
T-40	Tappet, 300332	4	1919-1920	1 1/2" dia. Head—3/4" dia. Stem—2 1/4" long over all	.65
P-40	Piston Pin, 19280	90	1917-20 Inc.	.875 dia. x 3 1/4" long	.29
P-41	Piston Pin, 3364	50, 69, 79, 81, 83, 85	1912-18 Inc.	.875" dia. x 3 3/4" long	.32
P-42	Piston Pin, 300313	4	1919-1920	.734 dia. x 2 1/4" long	.32

REO

V-50	Valve, Exh. 3RA2	4 Cyl.	1910-20 Inc.	2" dia. Head—3/4" dia. Stem—5 1/2" long over all	.75
V-51	Valve, Exh. 3MA17	6 Cyl.	1915-18 Inc.	2" dia. Head—3/4" dia. Stem—5 1/2" long over all	.75
V-50	Valve, Exh. 3RA2	6 Cyl.	1919-1920	2" dia. Head—3/4" dia. Stem—5 1/2" long over all	.75
V-53	Valve, Inl. 3RA60	All	1910-18 Inc.	1 1/2" dia. Head—3/4" dia. Stem—4 1/2" long over all	.75
P-50	Piston Pin, 1RA4	4 Cyl.	1910-20 Inc.	1.235" dia. x 3 3/4" long	.45
P-51	Piston Pin, 1MA6	6 Cyl.	1915-18 Inc.	1.235" dia. x 3 3/4" long	.45
P-52	Piston Pin, 176-A69	6 Cyl.	1919-1920	.984" dia. x 2 5/8" long	.31

STUDEBAKER

V-60	Valve, Inl. & Exh. 17501	SF-ED-No 7 Truck	1916-17-18	1 1/2" dia. Head—3/4" dia. Stem 7" long over all	.75
V-61	Valve, Inl. & Exh. 32090	SH-EH-EG	1918-19-20	1 1/2" dia. Head—3/4" dia. Stem—6 1/2" long over all	.75
P-60	Piston Pin, 16890	SF-ED No. 7 Truck	1916-17-18	1.125" dia. x 3 1/4" long	.50
P-61	Piston Pin, 32102	SH-EH-EG	1918-19-20	1" dia. x 3 1/2" long	.50

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- Davis, Waterman & Co., Elliott Square Bldg., Buffalo, N. Y.
 Esco Mfg. Co., 228 Farnsworth St., Detroit, Mich.
 Fisher—See Lefebvre Mfg. Co.
 Gasolock—See Headlight Support Co.
 Headlight Support Co., 728 Woodward Ave., Detroit, Mich. "Gasolock."
 Lefebvre Mfg. Co., 49 Church St., Boston, Mass. "Fisher." (See page 919.)
 McRae & Roberts Co., 100-16 S. Campbell Ave., Detroit, Mich.
 O. K. Lock Co., 264 Broadway, Buffalo, N. Y.

VALVES, GASOLINE RESERVE—See Valves, Two Way Tank**VALVES, GASOLINE RESERVE, FOR FORDS—See Cocks, Fuel Supply and Reserve****VALVES, LOCK—See Valves, Gasoline Lock****VALVES, Muffler Cut-Out**

(For cut-out pedals—See Pedals, Horn and Cut-out)

- Au-To Compressor Co., 308 S. Mulberry St., Wilmington, O. "Oro."
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Barco Mfg. Co., 212-23 W. Illinois St., Chicago, Ill.
 Buffalo Pressed Steel Co., Buffalo, N. Y.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y. "G.P.")
 Cooper Mfg. Co., Marshalltown, Iowa. (See page 574.)
 Cryan Cutout Co., Woonsocket, R. I.
 Eagle Engineering Co., W. Main St. & Bell Ave., Springfield, O. "Ruby."
 Emco Mfg. Co., Binghamton, N. Y. "Taber." Ewald—See Zinke Co.
 Fulton Co., Dept. S., 75th & National Aves., Milwaukee, Wis. (Distributors.) (See pages 569 to 574.)
 G. P.—See Cassidy Co.
 Gabriel Mfg. Co., 1421 E. 40th St., Cleveland, Ohio.
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 933.)
 Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E. Detroit, Mich.
 Handy—See Lunkenheimer Co.
 Husk—See Western Brass Mfg. Works.
 Loase Motor Products Co., Hebron, Ill. (See page 445.)
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Handy."
 Oldberg Mfg. Co., Detroit, Mich. (See page 597.)
 Oro—See Au-To Compressor Co.
 Perfect—See Riverside Machine Works.
 Perfection Machine Co., Jeromeville, O.
 Petry Co., N. A., 328-34 N. Randolph St., Philadelphia, Pa.
 Piel Co.—See Cassidy Co.
 Powell Muffler Co., Utica, N. Y. (See page 601.)
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Riverside Machine Works, 37 S. Jefferson St., New Castle, Pa. "Perfect."
 Romort Mfg. Co.—See Zinke Co.
 Ruby—See Eagle Engineering Co.
 Ruby Mfg. Co., 469 S. Fountain St., Springfield, O.
 Rudie—See Western Brass Mfg. Works.
 Stanhope Forge & Machine Works, 49-51 Lansdowne St., Cambridge, Mass.
 Sterling—See Republic Auto Parts Co.
 Stryker, C. W., 240 Shonnard St., Syracuse, N. Y.
 Taber—See Emco Mfg. Co.
 Waller Cutout Co., 133-39 S. Frederick St., Oelwein, Ia.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. "Rudie," "Husk." (See page 471.)
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald." (See pages 772 and 773.)

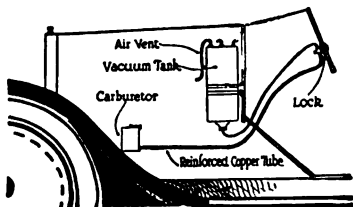
VALVES, Muffler Cut-Out, for Ford

- Allen Co., 23-25 Broadway, Camden, N. J.
 Am-Pe-Co Sales Co., Marshalltown, Ia. "Marshalltown." (See page 407.)
 Au-To Compressor Co., 308 S. Mulberry St., Wilmington, O. "Oro."
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Barco Mfg. Co., 212-23 W. Illinois St., Chicago, Ill.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for G. Piel Co., Long Island City, N. Y. "G.P.")
 Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Emco Mfg. Co., Binghamton, N. Y. "Taber." Empire—See S. B. R. Specialty Co.
 Ewald—See Zinke Co.
 G. P.—See Cassidy Co.
 Goodrich-Lenhardt Mfg. Co., Hamburg, Pa. (See page 933.)
 Gould Mfg. Co., Seneca Falls, N. Y.
 Gray-Hawley Mfg. Co., 3123-31 Jefferson Ave., E. Detroit, Mich.
 Illinois Brass Mfg. Co., 230 N. Ada St., Chicago, Ill.
 Marshalltown—See Am-Pe-Co Sales Co.
 Mechanical Utilities Corp., 1348 N. Clark St., Chicago, Ill. (Sole Distributors for Thomas Bros., Chicago, Ill.) (See page 401.)
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Oldberg Mfg. Co., Detroit, Mich. (See page 597.)
 Oro—See Au-To Compressor Co.
 Perkins-Campbell Co., Cincinnati, O. (See page 299.)
 Petry Co., N. A., 328-34 N. Randolph St., Philadelphia, Pa.
 Piel Co.—See Cassidy Co.
 Pratt Mfg. Co., Wm. E., 190 N. State St., Chicago, Ill.
 Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y. "Sterling."
 Roberts, G. E.—See Zinke Co.
 Romort Mfg. Co.—See Zinke Co.
 Ruby Mfg. Co., 469 S. Fountain St., Springfield, O.
 S. B. R. Specialty Co., 17-19 Princeton St., East Orange, N. J. "Empire."
 Sterling—See Republic Auto Parts Co.
 Sunvold Co., H. H., Sacred Heart, Minn.
 Taber—See Emco Mfg. Co.
 Thomas Bros.—See Mechanical Utilities Corp.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis. "Ewald" also Roberts, G. E., Milwaukee, Wis.) (See pages 772 and 773.)

Everything is listed under the NOUN or principal word

THE FISHER GAS-AUTO LOCK

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when motor is idle, thereby eliminating much fire hazard with the fuel system locked. The key can be removed only when the system is locked, so there can be no mistake.

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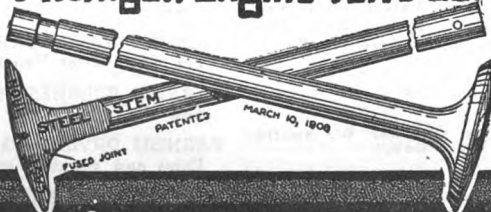
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Columbia
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Detroit
Michigan
U.S.A

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VALVES, Needle

American Brass & Iron Co., Detroit, Mich. (See page 203.)
 Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.
 Detroit Brass Works, 99 Hobart St., Detroit, Mich.
 Detroit Brass & Malleable Works, 1177 Holden Ave., Detroit, Mich.
 Lunkenheimer Co., Beekman & Waverly Sts., Binghamton, N. Y.
 Powell Co., Wm., 2525 Spring Grove Ave., Cincinnati, O.
 Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, PIN INSERTING TOOLS FOR FORDS—See Tools, Valve Pin Inserting**VALVES, POPPET—See Valves, Engine Poppet****VALVES, PRESSURE REGULATING—See Regulators, Pressure****VALVES, RESERVE—See Valves, Two Way Tank****VALVES, RESERVE, FOR FORDS—See Cocks, Fuel Supply****VALVES, SAFETY—See Valves, Steam Safety; also Valves, Tire****VALVES, STEAM PRESSURE CONTROL—See Controllers, Vulcanizer Steam Pressure****VALVES, Steam Safety**

American Steam Gauge & Valve Mfg. Co., 205-20 Camden St., Boston, Mass.
 Ashton Valve Co., 161 First St. (Cambridge), Boston, Mass.
 Caldwell, R. L., 74 Cortlandt St., New York, N. Y. "Notaleak."
 Champion Pneumatic Machinery Co., 1402 Michigan Ave., Chicago, Ill.
 Notaleak—See Caldwell, R. L.
 Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, Steam Throttle

Hilo—See P. A. T. S. Mfg. Co.
 P. A. T. S. Mfg. Co., Lodi, Cal. "Hilo."
 Williams Valve Co., D. T., Spring Grove Ave. & Township St., Cincinnati, O.

VALVES, TANK—See Valves, Two Way Tank; also Cocks, Spring Key; also Cocks, Standard; also Valves, Needle**VALVES, Tire**

Atlas Auto Supply Co., 697 W. Austin Ave., Chicago, Ill. "Day."
 (See page 279.)
 Automatic Safety Tire Valve Corp., 1753-55 Broadway, New York, N. Y. "Whistler."
 Day—See Atlas Auto Supply Co.

Griffin Mfg. Co., 113 State St., Boston, Mass.
 Holt Auto Devices Co., Conway Bldg., Chicago, Ill.
 Newsom Valve Co., 2714 La Salle St., St. Louis, Mo.
 Nugent-Cooke Mfg. Co., F. & Atlantic Sts., Philadelphia, Pa.
 Pulverman—See Triometer Valve Corp. of America.
 Schrader's Son, A., Brooklyn, N. Y. (See page 241.)
 Standard Tire Valve Co., 233 Broadway, New York, N. Y.
 Triometer Valve Corp. of America, Charleston, W. Va. "Pulverman."
 Whistler—See Automatic Safety Tire Valve Corp.

VALVES, Two Way Tank*(Fuel Reserve Valves or Cocks)*

Breeze Metal Hose & Mfg. Co., 250-52 South St., Newark, N. J.
 Clark & Co., A. C., 1035 E. 76th St. (Grand Crossing), Chicago, Ill. "Hi-Lo."
 Hancock Mfg. Co., 802 E. Henry St., Charlotte, Mich.
 Hi-Lo—See Clark & Co.
 Ideal Brass Works, 560 N. Elder Ave., Indianapolis, Ind.
 Imperial Brass Mfg. Co., 1234 W. Harrison St., Chicago, Ill. (See page 173.)
 Lunkenheimer Co., Beekman & Waverly Sts., Cincinnati, O. "Quadlock."
 Quadlock—See Lunkenheimer Co.
 Roberts Brass Mfg. Co., 5401 W. Fort St., Detroit, Mich.
 Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)

VALVES, TWO WAY TANK, FOR FORDS—See Cocks, Fuel Supply**VALVES, Water Circulation Regulating**

(Dash controlled valve for regulating the circulation of water in the cooling system.)
 Johnson Co., 1909 E. Forest Ave., Detroit, Mich. "Temp-Trol."
 Temp-Trol—See Johnson Co.

VANADIUM

American Vanadium Co., Vanadium Bldg., Pittsburgh, Pa.
 Vanadium Corp. of America, Equitable Bldg., New York, N. Y.

VANADIUM STEEL—See Steel, Vanadium**VANITY CASES—See Cases, Toilet and Card****VAPOR ENGINE STARTERS—See Starters, Gasoline or Vapor Engine****VARNISH BRUSHES—See Brushes, Paint and Varnish****VARNISH DRYING ROOMS—See Rooms, Paint and Varnish Drying****VARNISH PRESERVATIVES—See Polishes, Automobile Body**

Everything is listed under the NOUN or principal word

**VARNISH REMOVERS—See Removers,
Paint, Enamel and Varnish****VARNISHES**

- Acme White Lead & Color Works, 3250 St. Aubin Ave., Detroit, Mich.
Akron Varnish Co., Akron, O.
American Chemical & Mfg. Co., 617 Monticello Ave., Norfolk, Va. "Kleckspar."
American Paint Products Co., 810 S. Morgan St., Chicago, Ill.
American Varnish Co., 1133 N. Branch St., Chicago, Ill.
Anglo-American Varnish Co., 53-63 Johnson St., Newark, N. J.
Arco Co., Euclid Ave. & E. 65th St., Cleveland, O.
Armitage & Co., John L., 54 Dawson St., Newark, N. J.
Atlantic Varnish Works, 2329 Lester St., Richmond, Va. "Ultra-Blac," "Bodi-Kote,"
Ault & Wilborg Co., New, Seventh & Culvert Sts., Cincinnati, O.
Auto-Lak—See Johnson & Son.
Auto Products Mfg. Co., Buffalo, N. Y. "Renu-R-Kote."
Auto Specialties Mfg. Co., Buffalo, N. Y. (See page 345.)
B. P. S.—See Patterson-Sargent Co.
Barrett Varnish Co., 233 W. Lake St., Chicago, Ill.
Bay State—See Wadsworth, Howland & Co.
Beckwith-Chandler Co., 320 Fifth Ave., New York, N. Y.
Berry Bros., 311 Lieb St., Detroit, Mich.
Billings-Chapin Co., 1183 E. 40th St., Cleveland, O.
Bissell Varnish Co., Bridgeport, Conn.
Bodi-Kote—See Atlantic Varnish Co.
Boston Varnish Co., (Everett Sta.), Boston, Mass. "Kyanise."
Brooks & Co., Clarence, 249-77 Chestnut St., Newark, N. J.
Buckeye Paint & Varnish Co., 15th & Lucas Sts., Toledo, O.
Bulls-Eye—See Zinsser & Co.
Bunker Hill—See New England Oil, Paint & Varnish Co.
Certain-teed Products Corp., Boatmens Bank Bldg., St. Louis, Mo.
Chase, Roberts & Co., Fifth St. & West Ave., Long Island City, N. Y. "Kismet."
Chi-Var-Co—See Chicago Varnish Co.
Chicago Varnish Co., 2100 Elston Ave., Chicago, Ill. "Chi-Var-Co."
Cincinnati Varnish Co., 211 South St., Cincinnati, O.
Cleveland Varnish Co., Cleveland, O. "Free-lastic."
Columbus Varnish Co., Columbus, O. "Peerless Mirroroid." (See page 341.)
Da Cote—See Murphy Varnish Co.
Devos & C. T. Reynolds Co., F. W., 101 Fulton St., New York, N. Y.
Dibble Color Co., 445 Larned St., W., Detroit, Mich.
du Pont de Nemours & Co., E. I. (Paint & Varnish Division), Wilmington, Del.
E-Fec-Tiv—See Permatite Mfg. Co.
Effecto—See Pratt & Lambert.
Elmendorf Varnish Co., 343 Larrabee St., Chicago, Ill.
Empire Varnish Co., 2633-42 E. 76th St., Cleveland, O.
Flint Varnish & Color Works, Hamilton & St. Johns Sts., Flint, Mich.
Flood & Conklin Co., 136 Chestnut St., Newark, N. J. "Radium."
Forest City Paint & Varnish Co., 3334 Lakeside Ave., Cleveland, O.
Freelastico—See Cleveland Varnish Co.
French & Co., Samuel H., York Ave., Fourth & Callowhill Sts., Philadelphia, Pa.
Gillespie & Son, Chas. H., 19 Day St., Jersey City, N. J.
Glidden Co., W. Madison Ave. & L. S. & M. S. Ry., Cleveland, O.
Gold Cross—See Stewart-Mowry Co.
Graves Co., N. Z., 22-26 S. Third St., Philadelphia, Pa.
Hardy Paint & Varnish Co., Oakwood & N. C. R. R., Toledo, O.
Harland & Son, Wm., Genesee St. & Erie Canal, Buffalo, N. Y.
Harrison Works, 3523 Grays Ferry Rd., Philadelphia, Pa. "Vitrolac."
Heath & Milligan Mfg. Co., 1233 Seward St., Chicago, Ill.
Hildreth Varnish Co., 90 West St., New York, N. Y.
Hilo Varnish Corp., Marcy & Flushing Aves., Brooklyn, N. Y.
Howe Varnish Co., 253 Norman Ave., Brooklyn, N. Y.
Indianapolis Paint & Color Co., 129-24 S. Illinois St., Indianapolis, Ind.
Johnson & Son, S. C., 1012 16th St., Racine, Wis. "Auto-Lak."
Johnston Paint Co., R. F., Pearl & Main Sts., Cincinnati, O.
Kismet—See Chase, Roberts & Co.
Kleckspar—See American Chemical & Mfg. Co.
Kyanise—See Boston Varnish Co.
Liberty Chemical Works, Chicago, Ill. (See page 783.)
Lowe Bros. Co., 452 E. Third St., Dayton, O.
Lucas & Co., John, 322-30 Kase St., Philadelphia, Pa.
McDougall-Butler Co., 6 Evans St., Buffalo, N. Y.
Masury & Son, John W., 44-50 Jay St., Brooklyn, N. Y.
Mirro-Like Mfg. Co., Queens Blvd. & Buckley St., Long Island City, N. Y.
Mountain Varnish & Color Works, Toledo, O.
Murphy Varnish Co., Chestnut & McWhorter Sts., Newark, N. J. "Da-Cote."
New England Oil, Paint & Varnish Co., Everett, Mass. "Bunker Hill."
Nice, Eugene E., 263-74 S. Second St., Philadelphia, Pa.
Northwestern Chemical Co., 735 State St., Marietta, O. "Norwesco." (See page 275.)
Norwesco—See Northwestern Chemical Co.
Nubian Paint & Varnish Co., 1350 LeClaire Ave., Chicago, Ill.
O'Brien Varnish Co., Johnson & Washington Sts., South Bend, Ind.
Panvar Co., Bulletin Bldg., Philadelphia, Pa.
Parrott Varnish Co., 453 N. Washington Ave., Bridgeport, Conn.
Patterson-Sargent Co., E. 35th & St. Clair Sts., Cleveland, O. "B. P. S."
Peerless Mirroroid—See Columbus Varnish Co.
Permatex Co., Sheepshead Bay, N. Y. (See page 277.)
Permatite Mfg. Co., 21 Fifth St., N. E., Minneapolis, Minn. "E-Fec-Tiv."
Pratt & Lambert, 79 Tonawanda St., Buffalo, N. Y. "Effecto."
Queen City Varnish Co., Cincinnati, O.
Quickwork—See Standard Varnish Works.
Radium—See Flood & Conklin Co.
Re-Nu-R Products Co., 303 E. Lake St., Minneapolis, Minn.
Renu-R-Kote—See Auto Products Mfg. Co.

Everything is listed under the NOUN or principal word

VARNISHES (Continued)

Royal Varnish Co., Lake Shore Ave., Toledo, O.
 Schrack & Co., C., 152 N. Fourth St., Philadelphia, Pa.
 Servall—See Willey Co.
 Sherwin-Williams Co., 100 Canal St., Cleveland, O.
 Smith & Co., Edward Sixth St. & West Ave., Long Island City, N. Y.
 Standard Varnish Works, 90 West St., New York, N. Y. "Quickwork."
 Stewart-Mowry Co., 3218 Shields Ave., Chicago, Ill. "Gold Cross."
 Tousey Varnish Co., 520 W. 25th St., Chicago, Ill.
 Tylastic—See Western Reserve Varnish Co.
 U-Auto-Varnish Co., Altadena, Cal.
 Ultra-Blac—See Atlantic Varnish Works.
 Valentine & Co., 456 Fourth Ave., New York, N. Y. "Vanadium."
 Vanadium—See Valentine & Co.
 Vitrolac—See Harrison Works.
 Wadsworth, Howland & Co., 141 Federal St., Boston, Mass. "Bay State."
 Western Reserve Varnish Co., Cleveland, O. "Tylastic."
 Wheeler Varnish Works, 2260 Elston Ave., Chicago, Ill.
 Willey Co., C. A., 14th & Hancock Sts., Long Island City, N. Y. "Servall."
 Zinsser & Co., W., 195 William St., New York, N. Y. "Bulls-Eye."

VARNISHES, FOR FORDS—See Paints and Varnishes

VASES, FLOWER—See Holders, Bouquet

VEHICLE MOTION RECORDERS—See Recorders, Vehicle

VELVETS, Upholstery

Collins & Aikman Co., 8-12 E. 34th St., New York, N. Y.
 Seaco—See Seamans & Cobb Co.
 Seamans & Cobb Co., 140 Essex St., Boston, Mass. "Seaco."

VENEER ROOFING—See Panels, Wood

VENTILATORS, Cowl

Henvis Co., Garnett J., 1211-15 Filbert St., Philadelphia, Pa.
 Morris Co., George W., Layard & Douglas Ave., Racine, Wis.
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Petry Co., N. A., 328-34 N. Randolph St., Philadelphia, Pa.
 Polson Mfg. Co., 1750 Main St., Buffalo, N. Y.
 Rostand Mfg. Co., Milford, Conn.
 Tuckwell, Wm. S., 20 High St., Merrimacport, Mass.

VENTILATORS, COWL, for Fords

H. & D. Co., Crawfordsville, Ind.
 Morris Co., George W., Layard & Douglas Ave., Racine, Wis.
 National Aluminum Co., 1905 Frederick St., Racine, Wis.
 Petry Co., N. A., 328-34 N. Randolph St., Philadelphia, Pa.

VENTILATORS, FORE-DOOR—See Ventilators, Limousine

VENTILATORS, Limousine and Fore-Door

Cowles & Co., C., New Haven, Conn. (See page 451.)
 Douglas & Lomason Co., 5336 Lincoln Ave., Detroit, Mich.
 Long, Charles R. A., 127 S. East St., Indianapolis, Ind. "U. S. A."
 O'Brien Mfg. Co., Joseph F., 47-49 W. 63rd St., New York, N. Y.
 Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich.
 U. S. A.—See Long, Charles R. A.
 Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)

VENTILATORS, Limousine Roof

Waterhouse & Freeman Mfg. Co., 319 N. J. R. R. Ave., Newark, N. J.

VENTILATORS, Wind Shield

Higgin Mfg. Co., Newport, Ky. "Mac."
 Mac—See Higgin Mfg. Co.
 Morris Hardware Co., Connellsville, O. "Ventor."
 Ventor—See Morris Hardware Co.

VENTILATORS, Wind Shield, for Fords

Banker Windshield Co., Ellsworth Ave. & Summerlea Sta., Pittsburgh, Pa.
 Big B—See Bruening Windshield Co.
 Bruening Windshield Co., 1353 Chester Ave., Cleveland, O. "Big B."
 Gahm-McCormick Co., 806 E. Main St., Streator, Ill. (See page 171.)
 Gasco—See General Auto Specialty Co.
 General Auto Specialty Co., 151 Berkeley St., Boston, Mass. "Gasco."
 Michigan Auto Products Co., 2008 Grand River Ave., Detroit, Mich. "Ospeco."
 Motor Products Corporation, 11801 Mack Ave., Detroit, Mich. (See page 757.)
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Ospeco—See Michigan Auto Products Co.
 Star-K—See Stark-Inland Machine Works.
 Stark-Inland Machine Works, 611 N. Jefferson Ave., St. Louis, Mo. "Star-K."

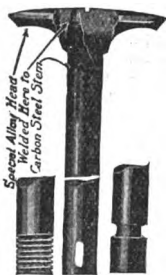
VIBRATORS, MASTER—See Coils, Spark

VIBRATORS, Master, for Fords

(See also Coils, Spark)

Connecticut Telephone & Electric Co., Meriden, Conn. (See page 289.)
 Crowe—See Lisle Mfg. Co.
 Funsteel Products Co., North Chicago, Ill. (See page 909.)
 Lisle Mfg. Co., Clarinda, Ia. "Crowe."
 New York Coll Co., 328-40 Pearl St., New York, N. Y. "TX."
 TX—See New York Coll Co.
 Temco Electric Motor Co., 25 Sugar St., Leipsic, O. (See page 877.)

Everything is listed under the NCUN or principal word



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Alloy Head Oxy-Acetylene Welded to Carbon Steel Stem
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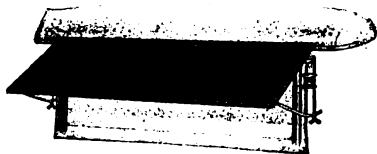
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BRASS AND BRONZE BUSHINGS

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VISCOSITY METERS—See Meters, Viscosity**VICES, Battery**

(To hold the battery secure and protect it from damage while withdrawing a cell)

Canody-Otto Mfg. Co., Chicago Heights, Ill.

VICES, BENCH—See Vises, Machinists'

VICES, Machinists'

Ajax—See Bonney Forge & Tool Works.

Anchor—See Prentiss Vise Co.

Athol Machine Co., Athol, Mass. "Simpson," "Standard."

Barbour-Stockwell Co., 205 Broadway, Cambridgeport, Mass.

Barnett Foundry & Machine Co., Oscar, Lyons Ave. & Cort St., Irvington, N. J. "New Idea."

Bonney Forge & Tool Works, Allentown, Pa. "Hercules," "Ajax," "Champion."

Braunsdorf-Mueller Co., 205 Madison St., Elizabeth, N. J.

Bridgeport Engineering Co., Seymour & Stratford Sts., Bridgeport, Conn.

Bull Dog—See Prentiss Vise Co.

Champion—See Bonney Forge & Tool Works.

Champion—See Western Tool & Mfg. Co.

Columbian Hardware Division, 1290 E. 53rd St., Cleveland, O.

Emmert Mfg. Co., W. Main St., Waynesboro, Pa.

Erie Tool Works, 11th & French Sts., Erie, Pa. F & R—See Fulton Machine & Vise Co.

Fisher & Norris, 37-45 Fair St., Trenton, N. J.

Fulton Machine & Vise Co., Lowville, N. Y. "Star," "Peerless," "F & R."

G-S—See Germanow-Simon Machine Works.

Germanow-Simon Machine Works, 58 Mill St., Rochester, N. Y. "G-R."

Goodell-Pratt Co., Greenfield, Mass.

Hercules—See Bonney Forge & Tool Works.

Hollands Mfg. Co.—See Jonas, C. N. & F. W.

Howard Iron Works, Chicago & Granger Sts., Buffalo, N. Y.

Jarecki Mfg. Co., 149 E. Ninth St., Erie, Pa.

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Hollands Mfg. Co., Erie, Pa.)

(See page 136.)

Lewis—See Prentiss Vise Co.

Luther Grinder Mfg. Co., Milwaukee, Wis.

Midland Co., South Milwaukee, Wis.

Monarch—See Prentiss Vise Co.

National Metal Products Co., 1016 E. 11th St., Indianapolis, Ind.

New Britain Machine Co., Chestnut St., New Britain, Conn.

New Idea—See Barnett Foundry & Machine Co.

Parker Co., Charles, 48 Elm St., Meriden, Conn.

Peerless—See Fulton Machine & Vise Co.

Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.

Prentiss Vise Co., 110 Lafayette St., New York N. Y. "Anchor," "Bull Dog," "Lewis," "Monarch," "Rapid Transit."

Rapid Transit—See Prentiss Vise Co.

Reed Mfg. Co., W. Eighth St., Erie, Pa.

Rock Island Mfg. Co., Rock Island, Ill. (See page 925.)

Schartow Mfg. Co., (So. Milwaukee) Milwaukee, Wis. "Sharto."

Sharto—See Schartow Mfg. Co.

Simpson—See Athol Machine Co.

Standard—See Athol Machine Co.

Star—See Fulton Machine & Vise Co.

Velox Vise Co., Lowville, N. Y.

Ware, J. L., 201 Harvard St., S. E., Minneapolis, Minn.

Western Tool & Mfg. Co., Springfield, O. "Champion."

Yost Mfg. Co., Meadville, Pa.

(See page 925.)

VICES, Pipe

Armstrong Mfg. Co., 335 Knowlton St., Bridgeport, Conn.

Athol Machine Co., Athol, Mass.

Blake—See Prentiss Vise Co.

Columbian Hardware Division, 1290 E. 53rd St., Cleveland, O.

Dikeman Mfg. Co., Merwin St., Norwalk, Conn.

Efficient Vise & Wrench Co., 4207 Clark Ave., Cleveland, O.

Erie Tool Works, 11th & French Sts., Erie, Pa.

Fisher & Norris, 37-45 Fair St., Trenton, N. J.

Greenfield Tap & Die Corp., Greenfield, Mass. (See page 855.)

Ideal—See Orange Machine & Mfg. Co.

Maglo—See Prentiss Vise Co.

Mark Mfg. Co., 111 W. Washington St., Chicago, Ill.

Monarch—See Prentiss Vise Co.

Orange Machine & Mfg. Co., 230 E. Jefferson St., Orange, N. J. "Ideal."

Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.

Parker Co., Charles, 48 Elm St., Meriden, Conn.

Phoenix Hardware Co., 49-53 Illinois St., Buffalo, N. Y.

Prentiss Vise Co., 110 Lafayette St., New York, N. Y. "Blake," "Monarch," "Rex," "20th Century," "Shepard," "Magic."

Reed Mfg. Co., W. Eighth St., Erie, Pa.

Rex—See Prentiss Vise Co.

Rock Island Mfg. Co., Rock Island, Ill. (See page 925.)

Saunders Sons, D., 27 Atherton St., Yonkers, N. Y.

Shepard—See Prentiss Vise Co.

20th Century—See Prentiss Vise Co.

Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. (See page 963.)

Yost Mfg. Co., Meadville, Pa.

(See page 925.)

VICES, Piston

Auto Metal Parts Co., 624 E. Locust St., Des Moines, Ia. "Messengers."

(See page 775.)

Dixie—See Southern Machine & Tool Co.

E & S—See Manley Mfg. Co.

Manley Mfg. Co., York, Pa. "E. & S." (See page 661.)

Messenger—See Auto Metal Parts Co.

Southern Machine & Tool Co., 3210 Locust St., St. Louis, Mo. "Dixie."

(See page 879.)

VICES, Piston, for Fords

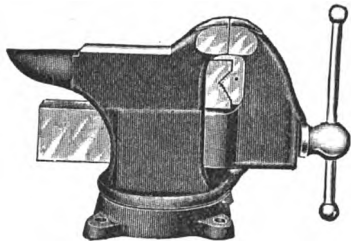
Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."

Carswell-Hammond Mfg. Co.—See Zinke Co.

Continental Auto Parts Co., 2207 E. 17th St., Columbus, Ind. (See page 661.)

Everything is listed under the NOUN or principal word

ROCK ISLAND AUTOVISE

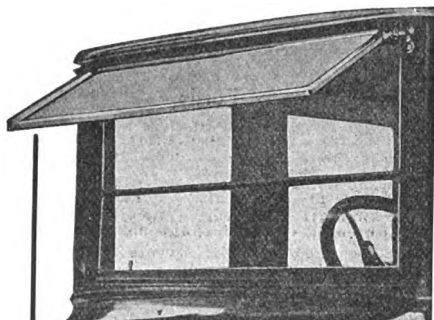


A Combination Pipe and Anvil Vise—particularly suitable for auto repair work—cast from high-grade steel and iron, which produces the high quality which is known in all **ROCK ISLAND VISES**

VISES *A Type and Size for Every Service*

NEW YORK, CHICAGO,
113-Chambers St. 180-North Market St.

ROCK ISLAND MFG. CO.
Rock Island, Ill.



*The New "TRIPLEX" (All-Metal) Windshield
VISOR and RAIN-GUTTER*

REPLACEMENT PARTS FOR
Buick—Chandler—Dodge—Hudson
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ALSO

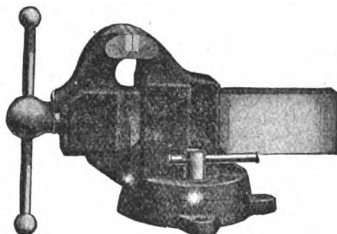
PISTONS AND PINS
For All Cars, Trucks and Motors

Manufactured and Guaranteed by

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YOST

YOST MANUFACTURING CO.
Meadville, Pa.
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*Manufacturers of High Grade
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ECLIPSE VISOR FOR OPEN and CLOSED CARS

Protects against *Sun—Storms—Street Lights*

WELL MADE—EASILY INSTALLED—ADJUSTABLE

PRICE \$7.00. *Attractive Discounts to Dealers*

LONNEY & CARMICHAEL

4835 WOODWARD AVENUE

DETROIT, MICHIGAN

Please mention The Automobile Trade Directory

VICES, Piston, for Fords (Cont'd)

Danielson Tool Co., Fulton St., Wausau, Wis.
 Dearborn Equipment Co., Kalamazoo, Mich. (See page 441.)
 Dee Tool Co., John, 1511 Third Ave., Rock Island, Ill.
 Dixie—See Southern Machine & Tool Co.
 Garage Equipment Co., 241 Fourth Ave., S., Minneapolis, Minn.
 Liberty Metal Products Co., Front St., & First Ave., Berea, O.
 Littell Machinery Co., 532-34 Washington St., Spokane, Wash.
 Miles Mfg. Co.—See Zinke Co.
 Peoria—See Auto Mechanics Tool Co.
 Railway Specialty Co., Atchison, Kans. "Ryaco."
 Rysco—See Railway Specialty Co.
 Southern Machine & Tool Co., 3210 Locust St., St. Louis, Mo. "Dixie." (See page 879.)
 Storm Mfg. Co., Minneapolis, Minn.
 Tribune Engineering Co., Front St., Owego, N. Y.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Carswell-Hammond Mfg. Co., Boone, Ia.; also Miles Mfg. Co., Newton, Ia.)

VICES, Portable

Autovise—See Rock Island Mfg. Co.
 Bonney Forge & Tool Works, Allentown, Pa. "Champion," "Standard."
 Champion—See Bonney Forge & Tool Works.
 F & R—See Fulton Machine & Vise Co.
 Fulton Machine & Vise Co., Lowville, N. Y. "F & R."
 Parker Co., Charles, 48 Elm St., Meriden, Conn.
 Rock Island Mfg. Co., Rock Island, Ill. "Autovise." (See page 925.)
 Standard—See Bonney Forge & Tool Works.

VICES, TRANSMISSION DRUM REPAIRING FOR FORDS—See Clamps or Vises, Transmission Drum Repairing**VISORS, SUN—See Visors, Wind Shield****VISORS, Top**

(Leather or fabric strip to attach to top to close up space between top and wind shield. For Wind Shield Visors—See Visors, Wind Shield.)

A. & E. Auto Top Co., 32-36 E. Cross St., Ypsilanti, Mich.
 Albany Machine Tool Co.—See Cassidy Co.
 Bondy Windshield Deflector Co., 5101 Carnegie Ave., Cleveland, O.
 Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sales Department for Albany Machine Tool Co., Albany, N. Y. "Ramsey.")
 Eclipse—See Lonney & Carmichael.
 Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Toptex." (See page 167.)

Lockwood Products Co., Metropolitan Bank Bldg., Minneapolis, Minn. (See page 853.)

Lonney & Carmichael, 4835 Woodward Ave., Detroit, Mich. "Eclipse." (See page 925.)

Martin Auto Specialty Co., 31 Forest Rose Ave., Lancaster, O.

Nathan Novelty Mfg. Co., Dept. T. D., 55 Fifth Ave., New York, N. Y. (See page 165.)

Ramsey—See Cassidy Co.

Road-View—See Smith & Co.

Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Road-View."

Thomas Auto Top Co., 417 E. Jackson St., Muncie, Ind.

Toptex—See Gemco Mfg. Co.

VISORS, Top, for Fords

(Leather or fabric strip to attach to top to close up space between top and wind shield); for Wind Shield Visors—See Visors, Wind Shield.)

American Automobile Accessories Co., 1700 Blue Rock St., Cincinnati, O. "3A."

Atlas Specialty Mfg. Co., 2110 S. Morgan St., Chicago, Ill. (See page 303.)

Baker-Lockwood Mfg. Co., Seventh & Wyandotte Sts., Kansas City, Mo.

Bnob & Scheu, 500-10 Webster St., Cincinnati, O. (See page 895.)

Chicago Wholesale Saddlery & Mfg. Co., 737-41 W. Randolph St., Chicago, Ill.

Clifton Mfg. Co., 323-27 Pleasant St., Waco, Tex.

Economy Seat Co., 3132-36 S. Canal St., Chicago, Ill. "Esco."

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Esco—See Economy Seat Co.

Fitzwell—See Niagara Fabric Mfg. Co.

Gemco Mfg. Co., 666 S. Pierce St., Milwaukee, Wis. "Toptex." (See page 167.)

Gordon Co., J. P., 555 N. Fourth St., Columbus, O.

Hodes-Zink Mfg. Co., 313 W. State St., Fremont, O. "Sure-Fit."

Kozy-Kar—See Stephens Rubber Co.

Monarch Carriage Goods Co., Marshall & Spring Grove Ave., Cincinnati, O. (See page 929.)

Niagara Fabric Mfg. Co., 47 Green St., New York, N. Y. "Fitzwell."

Omaha Auto Top Co., 709-11 S. 15th St., Omaha, Neb. (See page 303.)

Perkins-Campbell Co., Cincinnati, O. (See page 299.)

Powers Mfg. Co., Waterloo, Ia. (See page 530.)

R-E—See Roose Mfg. Co.

Roose Mfg. Co., 327-33 W. Main St., Louisville, Ky. "R-E."

Simon & Co., S. C., 325 N. Second St., Philadelphia, Pa.

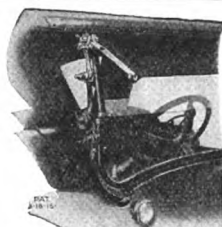
Stephens Rubber Co., A. J., 1437 Chestnut St., Kansas City, Mo. "Kozy-Kar."

Sure-Fit—See Hodes-Zink Mfg. Co.

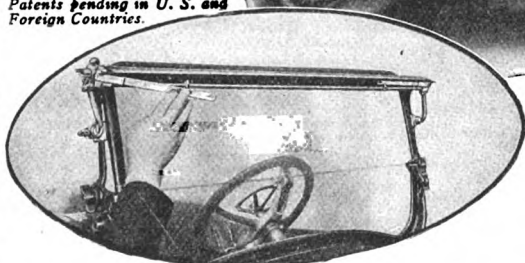
3A—See American Automobile Accessories Co.

Toptex—See Gemco Mfg. Co.

Everything is listed under the NOUN or principal word



Patented April 18, 1916, and
 Patents pending in U. S. and
 Foreign Countries.

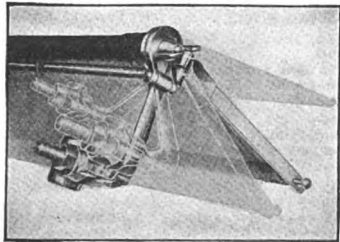


Easy To Fold Up

The Acme Visor is fastened to windshield entirely and does not interfere with the top. Note how easily it can be folded back out of sight when not in use. Rolls back on a spring similar to a window curtain.

Car Owners Want A Visor That Can Be Folded Up When Not Needed

Drivers of motor cars know the advantages of having a visor on their windshield, and they are already sold on the visor idea. Up to the present time motorists have hesitated buying a visor because they did not want a visor that could not be lowered or raised at will.



Note how the holding arm can be adjusted so that it will fit on different size windshields. The ratchet principle allows the visor to be lowered or raised instantly to suit the driver.

Every car owner who sees the exclusive features of the Acme Visor wants an Acme on his car. The dealer has so many talking points on the Acme that it is the easiest sold visor on the market.

Dealers have to stock only one model which will fit 90% of all touring cars. Their money is not invested in dead stock of different sizes, many of which are not often called for.

The fittings on the Acme Visor are all made of high-grade brass, highly nickel plated and polished, and guaranteed not to rust. The fittings are so accurately made that they will not rattle when fastened on. Dealers will find that it is a ready seller on account of its appearance and fine workmanship. Live business getting literature furnished. Manufactured by the Ansonia Mfg. Co., Ansonia, Conn.

Sales Department

ACME MOTOR SHIELD CORPORATION

1819 Broadway,

New York City

ACME VISOR

ADJUSTABLE TO ANY SIZE CAR

Please mention The Automobile Trade Directory

VISORS, Wind Shield

(Metal frame covered with leather fabric, celluloid, etc., to be attached to the wind shield. For Top Visors—See Visors, Top)

Accessory Supply Co., Reliance Bldg., Kansas City, Mo. "Asco."

Aeae Motor Shield Corp., 1819 Broadway, New York, N. Y. (See page 927.)

Adco—See American Automatic Devices Co.

Ainsworth Mfg. Co., 256 Dubois St., Detroit, Mich.

A-L-T Sunbeam—See Thoma & Son.

Alastic Tire Cushion Co., 1419-21 Locust St., St. Louis, Mo. "Budd."

Albany Machine Tool Co.—See Cassidy Co.

All-Weather—See Auto Visor Co.

All-Weather—See Banner Accessory Mfg. Co.

American Automatic Devices Co., Chicago, Ill. "Adco." (See page 251.)

Asco—See Accessory Supply Co.

Auto Radiator Shutter Co., 21 Callahan Bldg., Dayton, O. "Doty."

Auto Sun-Shade Mfg. Co., 1237 S. Figueroa St., Los Angeles, Cal. "Comfy."

Auto Sun Shield Corp., 380 Main St., East Orange, N. J. (See page 923.)

Auto Visor Co., 3418 N. 18th St., Philadelphia, Pa. "All-Weather." (See page 929.)

Badger—See Wisconsin Top Co.

Banner Accessory Mfg. Co., 2629-33 La Salle St., St. Louis, Mo. "All-Weather."

Bapco—See Baptiste Tent & Awning Co.

Baptiste Tent & Awning Co., 612 N. Third St., St. Louis, Mo. "Bapco."

Bierlein Syndicate, 1410 S. Los Angeles St., Los Angeles, Cal. "Glacyco."

Big B—See Bruening Windshield Co.

Brinck Mfg. Co., Fifth Ave. & 4th St., Moline, Ill. (See page 931.)

Brooklyn Windshield Co., 645 Bushwick Ave., Brooklyn, N. Y.

Bruening Windshield Co., 1353 Chester Ave., Cleveland, O. "Big B."

Budd—See Alastic Tire Cushion Co.

Cassidy Co., Edward A., 23 W. 43d St., New York, N. Y. (Sole Distributors for Albany Machine Tool Co., Albany, N. Y. "Ramsey.")

Cathcart, C. A., 161 Massachusetts Ave., Boston, Mass. "Triplex." (See page 925.)

Central Auto Top & Leather Co., 421 N. Capitol Ave., Indianapolis, Ind.

Clearview Mfg. Co., 1400 Hennepin Ave., Minneapolis, Minn.

Clear Vision—See Perfection Mfg. Co.

Code Mfg. Co., 1329 W. Lake St., Chicago, Ill.

Comfy—See Auto Sun-Shade Mfg. Co.

Co-Zee—See Omaha Auto Top Co.

Dad's Factories, 19 W. South St., Indianapolis, Ind.

Dassco—See Dayton Auto Sun Shade Co.

Dayton Auto Sun Shade Co., Dayton, O. "Dassco."

De Luxe—See Wedler-Shuford Co.

De Luxe—See New Era Spring & Specialty Co.

Detko Products Co., 555 Turk St., San Francisco, Cal.

Detroit Auto Visor Co., 1326 Woodbridge St., E., Detroit, Mich.

Detroit Radiator & Specialty Co., 4835 Woodward Ave., Detroit, Mich.

Dickinson & Co., 1801 Washington Ave. N., Minneapolis, Minn.

Doty—See Auto Radiator Shutter Co.

Eclipse Mfg. Co., 227-29 N. Haskell Ave., Dallas, Tex.

Economic Mfg. Co., 5020 Montview Blvd., Denver, Colo.

Ero Mfg. Co., 753-55 W. Jackson Blvd., Chicago, Ill.

Essenkey Products Co., 2601-09 Cottage Grove Ave., Chicago, Ill. "Mayer."

Ferguson Auto Top Co., 679 Stimson St., Detroit, Mich. "Ultimate."

Gabel Co., A. H. Goodman St. and Monroe Ave., Rochester, N. Y. (See page 893.)

Gemco Mfg. Co., 606 S. Pierce St., Milwaukee, Wis. "Toptex." (See page 167.)

Glacyco—See Bierlein Syndicate.

Hamilton Products Co., 413 S. Fifth St., Minneapolis, Minn. (See page 929.)

Hanson Specialty Co., C. P., Niles, Mich.

Hartford Windshield Co., 1006 S. Los Angeles St., Los Angeles, Cal.

Hillman Mfg. Co., 2317 E. 16th St., Los Angeles, Cal. "National."

Hooker-Marsh Mfg. Co., 214 E. Broadway, Muskogee, Okla. "Marsh."

Hopewell Bros., Watertown, Mass. (See page 965.)

Horat Mfg. Co., J., Lafayette, Ind. "Lafayette." (See page 420.)

Howe Visor Manufacturers, 4754 Woodward Ave., Detroit, Mich.

Indiana Parts Co., Richmond, Ind.

J. H. Auto Co., Frankfort, Ind. "Keller."

Jackknife—See Roberts Mfg. Co.

Jenkins Vulcan Spring Co., Richmond, Ind. (See page 929.)

Johnson Sons Co., 622-26 Cherry St., Philadelphia, Pa. "Konsalk."

Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Rain-Sun Vision Shield Co., Los Angeles, Cal.)

Keller—See J. H. Auto Co.

Kleer-Vue—See Merit Co.

Konsalk—See Johnson Sons Co.

Lafayette—See Horat & Co.

Laughlin & Schuler, Kimball Bldg., Evanston, Ill. "Viso-Shade."

Lite-Products Corp., 9 W. Kinzie St., Chicago, Ill.

Lockwood Products Co., Metropolitan Bank Bldg., Minneapolis, Minn. (See page 853.)

Loudon, Inc., 107 Western Ave., Minneapolis, Minn.

McKinnon Dash Co., Buffalo, N. Y. (See page 686.)

Marsh—See Hooker-Marsh Mfg. Co.

Maurer Co., O., 1317 Bushwick Ave., Brooklyn, N. Y. "No Glare." (See page 941.)

Mayer—See Essenkey Products Co.

Merit Co., ft. Jackson St., Oakland, Cal. "Kleer-Vue."

Metal Specialties Mfg. Co., 338-52 N. Kedzie Ave., Chicago, Ill. "Presto." (See page 503.)

Metropolitan Air Goods Co., Marble St., Athol, Mass.

Model & Metalwork Mfg. Co., 128 Opera Pl., Cincinnati, O. "See-Wel." (See page 923.)

Monarch Carriage Goods Co., Marshall & Spring Grove Aves., Cincinnati, O. (See page 929.)

Morgan, Geo. W., 35 S. Desplaines St., Chicago, Ill.

Myar Mfg. Co., 3026-28 Locust St., St. Louis, Mo.

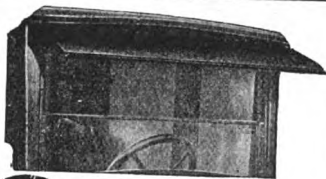
National—See Hillman Mfg. Co.

New Era Spring & Specialty Co., 51-55 Cottage Grove St. S. W., Grand Rapids, Mich.

"De Luxe."

Noglare—See Maurer Co.

Everything is listed under the NOUN or principal word



\$4.50
Liberal discounts
to the Trade

Type A (shown above);
universal fixed type for
all straight front closed
cars

VULCAN VIZOR

dominates the market at the remarkable price of \$4.50, and yields a liberal profit to the dealer.

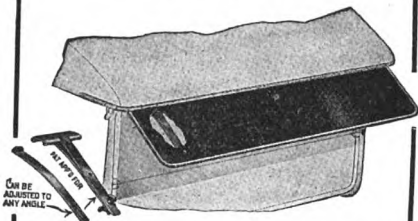
Type B is a universal adjustable type for all open cars.

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One-piece construction, of highest grade Armino automobile sheet steel; baked black satin enamel finish. Our name on every one.

Order from your jobber, or write us
JENKINS VULCAN SPRING CO.
RICHMOND, INDIANA

The Monarch Auto Visor



Most Practical and Neatest Sunshield Made

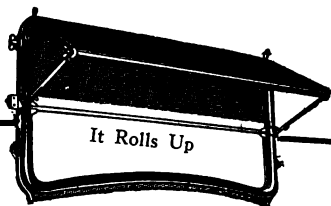
SPECIAL FEATURES

THE GREEN UNDERSIDE (Restful on the Eyes)	NO SIDE BRACES (To Obstruct the View) Adjustable in a moment to any angle. Retail price, \$4.50 put on car.
ROUND CORNERS (Improve the appearance)	

Dealers and Jobbers—Write for a really interesting proposition today

THE MONARCH CARRIAGE GOODS CO.

Marshall and Spring Grove Avenues
Cincinnati, Ohio



It Rolls Up

Hamilton

Vision Shield

A high class, all year necessity for open or closed cars.

Protects driver from sun and glare.
Cuts blinding head lights.

Rolls up when not needed. Locks rigidly. No buckling. No rattle. Adds class to any car.

De Luxe Model—Best grade double texture black auto top covering.

Side arms nickel plated. Semi-automatic.

Standard Model. Good grade black top covering. Side arms flat with black japan finish. Easily adjusted.

Ask your jobber. Or write us for either model on ten-day approval. Give name and year of car, open or closed.

Hamilton Products Co.

413 South 5th St., Minneapolis, Minn.



"ALL-WEATHER" Adjustable Windshield Visor

The most practical equipment ever offered, appealing to every motorist on account of the ease with which it is attached to the car and adjusted to all eye levels and weather conditions.

"All-Weather" Adjustable Windshield Visors made of the most durable materials and are sold with a full guarantee. They are made for all cars, open or closed and, being entirely separate from the windshield, do not interfere with the latter.

Liberal Discounts to the Trade

AUTO VISOR COMPANY

3418 North 18th St. PHILADELPHIA, PA.

Please mention The Automobile Trade Directory

VISORS, Wind Shield (Continued)

Omaha Auto Top Co., Omaha, Neb.
 "Co-Zee." (See page 303.)
Patents Mfg. Co., 800 Sibley St., Chicago, Ill. "P-M."
Pennsylvania Pressed Steel Corp., Wayne Ave. & Berkley St., Philadelphia, Pa. "Yankee."
Perfection Mfg. Co., Petersburg, Va. "Clear Vision."
Pickard Co., T. W., 40 S. Front St., Columbus, O.
 P-M—See Patents Mfg. Co.
Powers Mfg. Co., Waterloo, Iowa.
 (See page 530.)
Presto—See Metal Specialties Mfg. Co.
Rain-Sun Vision Shield Co.—See Jonas, C. N. & F. W.
Ramsey—See Cassidy Co.
Ray-N-Shield — See Western Windshield Works.
Rex Mfg. Co., Connersville, Ind.
 (See page 807.)
Reid & Son, J. A., 161 Summer St., Boston, Mass.
Roberts Mfg. Co., New Haven, Conn.
 "Jackknife." (See page 941.)
Royal—See United Glass & Glazing Co.
Saf-T—See Toledo Wood Products Co.
Safetee-Glass Co., 326 N. Broad St., Philadelphia, Pa.
See-Wel—See Model & Metalwork Mfg. Co.
Thoma & Son, Fairfield, Ia. "A-L-T Sunbeam."
Thums Visor Co., 107 Young St., Tonawanda, N. Y.
Toledo Wood Products Co., Toledo, O.
 "Saf-T."
Toptex—See Gemco Mfg. Co.
Treichel, T. J., 366 Golden Gate Ave., San Francisco, Cal.
Triplex—See Cathcart Co., C. A.
Troy Sun Shade Co., 710 Lincoln Ave., Troy, O.
U. S. Auto Equipment Co., Milwaukee & Michigan Sts., Milwaukee, Wis.
Ultimate—See Ferguson Auto Top Co.
United Glass & Glazing Co., 660 Golden Gate Ave., San Francisco, Cal. "Royal."
Viso-Shade—See Laughlin & Schuler.
Vulcan—See Jenkins Vulcan Spring Co.
Ward Mfg. Co., E. T., Oak Park, Ill.
Wedler-Shuford Co., 19th & Locust Sts., St. Louis, Mo. "De Luxe."
Western Windshield Works, 1513 Hennepin Ave., Minneapolis, Minn. "Ray-N-Shield."
Williams Mfg. Co., 121-125 W. 35th St., Los Angeles, Cal. (See page 525.)
Windshield Avning Co., St. Augustine, Fla.
Wisconsin Top Co., Racine, Wis. "Badger." (See page 299.)
Wright Mfg. Co., 11 Second St., S. E., Minneapolis, Minn.
Yankee—See Pennsylvania Pressed Steel Corp.
Zenith Products Co., Spring Lake, Mich.

VOLTMETERS — See Ammeters; also Gages, Battery

VULCANIZER STEAM PRESSURE CONTROLLERS—See Controllers, Vulcanizer Steam Pressure

VULCANIZER THERMOMETERS — See Thermometers, Vulcanizer

VULCANIZER TOOLS—See Tools, Tire Vulcanizing

VULCANIZERS, Portable

Adamson Mfg. Co., East Palestine, O.
Arso Mfg. Co.—See Howard Lubricants Co.
Champion, F. M., 14-16 Elizabeth St., Utica, N. Y.
Continental Auto Parts Co., 2207 E. 17th St., Columbus, O. (See page 681.)
5-Minute—See Shaler Co.
Gwynn-Bacon Vulcanizer Co., 2504 Cass Ave., St. Louis, Mo.
Horsey Products Co., 4815 Lexington Ave., Cleveland, O.
Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. (Sole Distributors for Arso Mfg. Co., Schenectady, N. Y.)
Lazarus Mfg. Co., 224 High St., Cleveland, O.
 "Two-in-one."
Magic Auto Devices Co., Lynbrook, N. Y.
Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
Milwaukee Auto Specialty Mfg. Co., 705-15 Chestnut St., Milwaukee, Wis. "Radio."
National Rubber & Specialties Co., 4432-33 Chickering Ave., Cincinnati, O. "Vulcar."
P. I. W.—Peckstein Iron Works.
Peckstein Iron Works, Ninth & Johnson Sts., Keokuk, Iowa. "P. I. W."
Pollak Tool & Stamping Co., Joseph, 81-85 Freepport St., Boston, Mass.
 (See page 809.)
Radio—See Milwaukee Auto Specialty Co.
Risk's Riskless Vulcanizer Co., Plymouth Bldg., Minneapolis, Minn.
Safety Vulcanizer Mfg. Co., Brown & Jefferson Sts., Waupun, Wis.
Shaler Co., C. A., 911 Fourth St., Waupun, Wis. "Vul-Kit," "5-Minute." (See pages 336, 939 and 965.)
Super-Vulcanizer Mfg. Co., 146 South West Temple, Salt Lake City, Utah.
Two-in-one—See Lazarus Mfg. Co.
Utility Tire Machinery Co., 401 Penn Ave., Joplin, Mo.
Vul-Kit—See Shaler Co.
Vulcar—See National Rubber & Specialties Co.

VULCANIZERS, Portable, for Fords

Horsey Products Co., 4815 Lexington Ave., Cleveland, O.
Lazarus Mfg. Co., 224 High St., Cleveland, O.
 "Two-in-one."
Magic Auto Devices Co., Lynbrook, N. Y.
Republic Auto Parts Co., 81-85 Tenth St., Long Island City, N. Y.
Shaler Co., C. A., 911 Fourth St., Waupun, Wis. (See pages 335, 939 and 965.)
Two-in-one—See Lazarus Mfg. Co.

VULCANIZERS, Shop

Acme Supply Co., 112 Dexter St., Ionia, Mich.
Adams-Barre Co., 1242 N. High St., Columbus, O.
Akron Rubber Mold & Machine Co., 917 Sweetser Ave., Akron, O. "Tip-Top."
Akron-Williams—See Williams Foundry & Machine Co.
All-In-One—See Miller, Chas. E.
Allen—See Diamond Mfg. Co.
Anderson Steam Vulcanizer Co., 365 Woodward Ave., Indianapolis, Ind.
Arthur Vulcanizing Machine Co., Griswold St., Warren, O.
Auto-Tire Vulcanizing Co., 140 Powell St., Lowell, Mass. "Lowell."
Bacon Vulcanizer Mfg. Co., 4065 Hollis St., Oakland, Cal.

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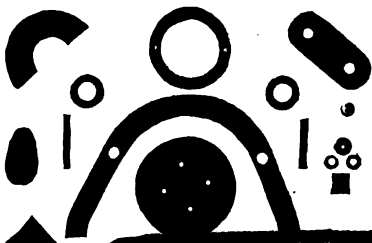
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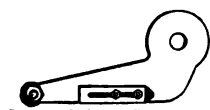
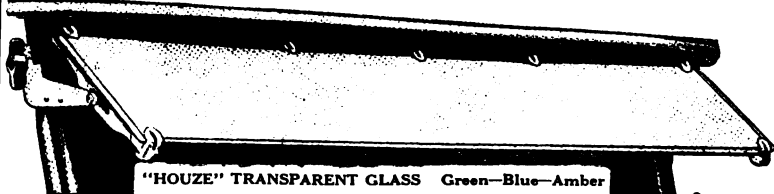
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VULCANIZERS, Shop (Continued)

Badger—See Tire Repair Equipment Co.
 Biggs Boiler Works Co., 1007 Bank St., Akron, Ohio.
 Brown Mfg. Co., Jesse F., 2652 Long Beach Ave., Los Angeles, Cal.
 Burge Machine Works, 218-30 N. Jefferson St., Chicago, Ill. "Excelsior."
 Caldwell Co., L. L., 2405 S. Main St., Los Angeles, Cal. "Hammer."
 Craft—See Wood-Craft Co.
 Diamond Mfg. Co., Des Moines, Ia. "Allen."
 Dri-Kure-Retredrer—See Western Vulcanize Mfg. Co.
 Duncan Co., F. M., 114 E. Ohio St., Chicago, Ill.
 Economy Auto Supply Co., 268 Halsey St., Newark, N. J. (New Jersey Distributor for Lowell Vulcanizers.) (See page 495.)
 Excelsior—See Burge Machine Works.
 Globe Machine & Stamping Co., Cleveland, O. "Sepeco." (See page 155.)
 Hammer—See Caldwell Co.
 Harkins Machine Co., T. L., 25 Union Sq. (Allston), Boston, Mass.
 Hayner—See Mason Mfg. Co.
 Haywood Tire & Equipment Co., 1230 N. Capitol Ave., Indianapolis, Ind.
 Hibbs Rubber Co., 200 S. Boaz St., Fort Worth, Tex.
 Jim Dandy—See Scheffer & Rossum Co.
 Legnard Co., A. B., Waukegan, Ill. "Vulcan."
 Lowell—See Auto-Tire Vulcanizing Co.
 Mason Mfg. Co., Mason, Mich. "Hayner."
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind. "All-In-One."
 Milwaukee Auto Specialty Mfg. Co., 705-11 Chestnut St., Milwaukee, Wis. "Radium."
 National Rubber Mold Co., 2763 Blake St., Denver, Colo.
 O'Neil Tire & Rubber Co., 350-54 Bowery St., Akron, O.
 P. S. M. Co., 3116-36 Snelling Ave., Minneapolis, Minn. "Progressive." (See page 931.)
 Phoenix Tire & Rubber Co., 1614 S. Michigan Ave., Chicago, Ill.
 Progressive—See P. S. M. Co.
 Progressive Mfg. Co., 468 64th Ave., West Allis, Wis.
 Radium—See Milwaukee Auto Specialty Co.
 Redex—See Rubber Products & Machinery Co.
 Reliance Mfg. Co., Broadway & Glenarm St., Pasadena, Cal.
 Rubber Products & Machinery Co., 225 E. Ninth St., Los Angeles, Cal. "Redex."
 Scheffer & Rossum Co., 104-08 E. Tenth St., St. Paul, Minn. "Jim Dandy."
 Spco—See Globe Machine & Stamping Co.
 Shaler Co., C. A., 910 Fourth St., Waupun, Wis. (See pages 335, 939 and 965.)
 Super Vulcanizer Mfg. Co., 110 E. 11th St., Los Angeles, Cal.
 Sunlite Co., McKinney, Tex.
 Tip-Top—See Akron Rubber Mold & Machine Co.
 Tire Repair Equipment Co., 782 College Ave., Appleton, Wis. "Badger."
 Vanderpool Vulcanizing Co., 723 W. Mulberry St., Springfield, O.
 Victor Vulcanizer Mfg. Co., 1929 O'Fallon St., St. Louis, Mo.
 Vulcan—See Legnard Co.
 Western Rubber Mold Co., 243 N. Crawford Ave., Chicago, Ill.
 Western Vulcanizer Mfg. Co., 150 N. Desplaines St., Chicago, Ill. "Dri-Kure-Retredrer."

VULCANIZERS, Portable

Adamson Mfg. Co., East Palestine, O.
 Arasco Mfg. Co.—See Howard Lubricants Co.
 Champion, F. M., 14-16 Elizabeth St., Utica, N. Y.
 Continental Auto Parts Co., 2207 E. 17th St., Columbus, O. (See page 661.)
 5-Minute—See Shaler Co.
 Gwynn-Bacon Vulcanizer Co., 2504 Cass Ave., St. Louis, Mo.
 Horsey Products Co., 4815 Lexington Ave., Cleveland, O.
 Howard Lubricants Co., 1105 Bedford Ave., Brooklyn, N. Y. (Sole Distributors for Arasco Mfg. Co., Schenectady, N. Y.)
 Lazarus Mfg. Co., 224 High St., Cleveland, O. "Two-in-one."
 Magic Auto Devices Co., Lynbrook, N. Y.
 Miller, Chas. E., 1400 S. Meridian St., Anderson, Ind.
 Milwaukee Auto Specialty Mfg. Co., 705-11 Chestnut St., Milwaukee, Wis. "Radio."
 National Rubber & Specialties Co., 4431-33 Chickering Ave., Cincinnati, O. "Vulcar."
 P. I. W.—Peckstein Iron Works.
 Peckstein Iron Works, Ninth & Johnson Sts., Keokuk, Iowa. "P. I. W."
 Pollak Tool & Stamping Co., Joseph, 81-85 Freeport St., Boston, Mass. (See page 809.)
 Radio—See Milwaukee Auto Specialty Co.
 Risk's Riskless Vulcanizer Co., Plymouth Bldg., Minneapolis, Minn.
 Safety Vulcanizer Mfg. Co., Brown & Jefferson Sts., Waupun, Wis.
 Shaler Co., C. A., 911 Fourth St., Waupun, Wis. "Vul-Kitt." "5-Minute." (See pages 335, 939 and 965.)
 Super-Vulcanizer Mfg. Co., 146 South West Temple, Salt Lake City, Utah.
 main Electric Co., 140 W. Austin Ave., Chicago, Ill. "Hold-Heat."
 Neverout—See Rose Mfg. Co.
 Rose Mfg. Co., 37th & Filbert Sts., Philadelphia, Pa. "Neverout."
 Russell Electric Co., 140 W. Austin Ave., Chicago, Ill. "Hold-Heat."

WASH APRONS—See Aprons, Wash**WASH STAND LIGHTS—See Lights, Wash Stand****WASHER CUTTERS—See Cutters, Washer or Gasket****WASHER PUNCHES—See Punches, Arch and Washer****WASHERS, AIR—See Cleaners, Air****WASHERS, Brass and Copper**

American Brass Co., Waterbury, Conn. (See page 161.)
 Bridgeport Brass Co., Bridgeport, Conn.
 Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 983.)
 Plume & Atwood Manufacturing Co., Waterbury, Conn.
 Rome Brass & Copper Co., Rome, N. Y.
 Steele & Johnson Manufacturing Co., Waterbury, Conn.
 Waterbury Manufacturing Co., Waterbury, Conn.

WASHERS, CAR—See Washers, Vehicle**WASHERS, COPPER—See Washers, Brass and Copper**

Everything is listed under the NOUN or principal word



WASHERS

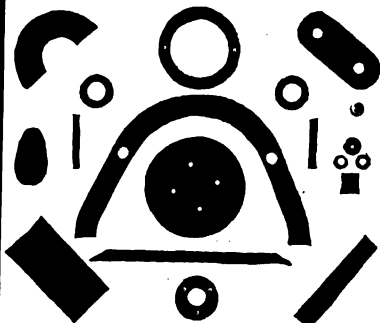


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WASHERS, Cork

Acco—See Armstrong Cork Co.
 Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill.
 (See page 373.)
 Armstrong Cork Co., 124 23rd St., Pittsburgh, Pa. "Acco."
 Diamond Cork Co., S. 11th & Berry Sts., New York, N. Y.
 Field & Co., R. B., Worcester, Mass.
 "Fieldco." (See page 937.)
 Fieldco—See Field & Co.
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."
 Jointite—See Mundet & Son.
 Mundet & Son, L., S. 11th & Berry Sts., Brooklyn, N. Y. "Jointite."
 (See page 411.)
 Paddock Cork Co., 1209-17 De Kalb Ave., Brooklyn, N. Y. (See page 933.)
 Right—See Gasket Supply Co.
 Spanish-American Cork & Specialty Co. (Westport), Baltimore, Md.

WASHERS, Felt

(For Sheet Felt—See Felt, Sheet)

Advance Felt & Cutting Co., 315E S. Jefferson St., Chicago, Ill.
 (See page 373.)
 American Felt Co., 100 Summer St., Boston, Mass. (See page 373.)
 Atlantic Felt Cutting Co., 93rd St. & Fourth Ave., Brooklyn, N. Y.
 Auburn Leather Goods Co., 2 Miller St., Auburn, N. Y.
 Booth Felt Co., 463-73 19th St., Brooklyn, N. Y. (See page 375.)
 Braunsdorf, Geo. W., 430 E. 63d St., New York, N. Y.
 Brawley, T. R., 272-74 20th St., Brooklyn, N. Y. (See pages 375 and 935.)
 Excelsior Leather Washer Mfg. Co., Rockford, Ill. "X. L."
 Fel-Pro—See Felt Products Mfg. Co.
 Felt Products Mfg. Co., 2419 W. 14th St., Chicago, Ill. "Fel-Pro."
 Felters Co., Millbury, Mass.
 (See page 933.)
 Field & Co., R. B., Worcester, Mass.
 "Fieldco." (See page 937.)
 Fieldco—See Field & Co.
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."
 House & Sons, Chas. W., Unionville, Conn.
 Lyons Felt Co., 338 Myrtle Ave., Brooklyn, N. Y.
 Monarch Felt Works, 39-45 York St., Brooklyn, N. Y.
 Rhocom—See Rhodes & Co.
 Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill. "Rhocom."
 Right—See Gasket Supply Co.
 Standard Felt Co., West Alhambra, Cal.
 Star Felt Cutting Co., 260 69th St., Brooklyn, N. Y.
 Sutherland Leather & Felt Co., 139 Beaubien St., Detroit, Mich.
 Western Felt Works, 4031-4115 Ogden Ave., Chicago, Ill.
 X. L.—See Excelsior Leather Washer Mfg. Co.

WASHERS, FELT, FOR FORDS—See Gaskets, Felt

WASHERS, FIBRE—See Fibre, Hard

WASHERS, Finishing

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."
 Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 933.)
 North & Judd Mfg. Co., 499 E. Main St., New Britain, Conn.
 Read & Co., A. P., 568 W. Washington St., Chicago, Ill.
 Right—See Gasket Supply Co.
 Stanley Works, (Special Productions Dept.), New Britain, Conn.
 (See page 457.)

WASHERS, Iron and Steel

American Iron & Steel Mfg. Co., Front & Cumberland Sts., Lebanon, Pa.
 Bettcher Mfg. Co., 58th St. & P. C. R. R., Cleveland, O.
 Bossert Corp., Utica, N. Y.
 Clark Bros. Bolt Co., Milldale, Conn.
 Cleveland Wrought Products Co., W. 58th St., South of Denison, Cleveland, O.
 Columbus Bolt Works Co., Columbus, O.
 (See page 147.)
 Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."
 Hoefeld & Co., R., Buffalo, N. Y.
 Hubbard Spring Mfg. Co., Pontiac, Mich.
 (See page 798.)
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill.
 (See page 821.)
 Kales Stamping Co., 1657 W. Lafayette Blvd., Detroit, Mich.
 Kongslow Mfg. Co., Otto, 3501 Perkins Ave., Cleveland, O.
 Massachusetts Machine Shop, 817 Albany St., Boston, Mass. (See page 933.)
 New England Bolt & Steel Co., Bowdoin St. (Everett), Boston, Mass.
 Oakes Co., Indianapolis, Ind.
 (See page 369.)
 Pittsburgh Screw & Bolt Co., Preble Ave. (N. S.), Pittsburgh, Pa.
 Quadriga Mfg. Co., 214-21 W. Grand Ave., Chicago, Ill.
 Reliance Mfg. Co., Massillon, O.
 (See page 937.)
 Republic Iron & Steel Co., Republic Bldg., Youngstown, O.
 Right—See Gasket Supply Co.
 Sessions & Son, J. H., Riverside Ave., Bristol, Conn.
 Smith Co., Thomas, 13 Cypress St., Worcester, Mass.
 Stanley Works (Special Productions Dept.), New Britain, Conn.
 (See page 457.)
 Steele & Johnson Mfg. Co., 779 S. Main St., Waterbury, Conn.
 Upson Nut Co., Unionville, Conn.
 Worcester Stamped Metal Co., Worcester, Mass. (See page 811.)
 Wrought Washer Mfg. Co., 46 S. Bay St., Milwaukee, Wis.

WASHERS, Leather

Algo—See Auburn Leather Goods Co.
 Auburn Leather Goods Co., 3 Miller St., Auburn, N. Y. "Algo."
 Chicago Rawhide Co., 1301 Elston Ave., Chicago, Ill.

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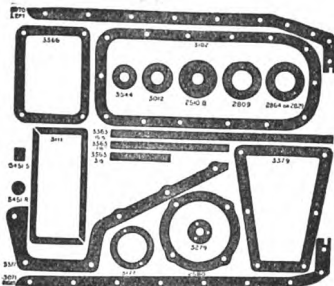
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For Ford Cars

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WASHERS, Leather (Continued)

Detroit Leather Works, 683 E. Lafayette Blvd., Detroit, Mich.
(See page 121.)

Duckwall Belting & Hose Co., 201-05 N. West St., Indianapolis, Ind.
(See page 595.)

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "G. & K." Washers.)
(See page 113.)

Excelsior Leather Washer Mfg. Co., Rockford, Ill. "X. L."

Field & Co., R. B., Worcester, Mass. "Fieldco." (See page 937.)

Fieldco—See Field & Co.

G. & K.—See Graton & Knight Mfg. Co.

Gasket Supply Co., 1728 Ludlow St., Philadelphia, Pa. "Right."

General Tanning Corp., Chester, Mt. Vernon & Medborn Aves., Irvington, N. J.

Graton & Knight Mfg. Co., Worcester, Mass. "G. & K." (See page 113.)

Hide Leather & Belting Co., 233 S. Meridian St., Indianapolis, Ind.

Hosfeld & Co., R., 61-69 Carroll St., Buffalo, N. Y.

Hunt Co., Henry C., 261 Franklin St., Boston, Mass.

Judd & Leland Mfg. Co., Clifton Springs, N. Y.

Kendrick Valve & Washer Co., 313 E. Water St., Syracuse, N. Y.

Leather Parts Co., 1619-21 Prospect St., Indianapolis, Ind.

Marsh Co., Charles W., 37 Hudson St., Muskegon, Mich.

Reinhold Belting & Supply Co., 491 Atlantic Ave., Brooklyn, N. Y.

Right—See Gasket Supply Co.

Simco—See Simplex Mfg. Co.

Simplex Mfg. Co., Auburn, N. Y. "Simco."

Sutherland Leather & Felt Co., 139 Beaubien St., Detroit, Mich.

X. L.—See Excelsior Leather Washer Mfg. Co.

WASHERS, LOCK—See Nuts, Lock

WASHERS, MICA—See Mica

WASHERS, OVERHEAD—See Washers, Vehicle

WASHERS, PUMP—See Washers, Leather; also Washers, Tire Pump

WASHERS, RUBBER—See Rubber, Hard

WASHERS, SPRING—See Washers, Steel Spring

WASHERS, STEEL—See Washers, Iron and Steel

WASHERS, Steel Spring

Barnes Co., Wallace, Bristol, Conn.

Hobbs Mfg. Co., 26 Salisbury St., Worcester, Mass.

Positive Lock Washer Co., Newark, N. J.
(See page 937.)

WASHERS, Tire Pump Connection

Romort Mfg. Co.—See Zinke Co.

Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Romort Mfg. Co., Oakfield, Wis.)
(See pages 772 and 773.)

WASHERS, VALVES STEM SEALING—
See Seals, Valve Stem

WASHERS, Vehicle

Allen—See Persinger & Co.
American Textile Mfg. Co., Cleveland, O. "No-Mar."

Arkaco—See Rennous, Kleinle & Co.

Binks Spray Equipment Co., 3114-26 Carroll Ave., Chicago, Ill.

Boston Auto-Washer Co., 286 Commercial St., Boston, Mass.

Cataract Auto Washer Co., 1269 Western Ave., Topeka, Kans.

De Luxe—See Famasco Distributing Co.

Davis & Kass, 25 W. Broadway, New York, N. Y.

Famasco Distributing Co., 694 Main St., Buffalo, N. Y. (Sole Selling Agents for Vehicle Specialty Co., Hartford, Conn. "De Luxe.")

Fitsit—See Rennous, Kleinle & Co.

Fuller Brush Co., 74 Union Pl., Hartford, Conn.

Hahn, Arthur W., 1-7 Dominick St., New York, N. Y.

Heaney Mfg. Co., 10-13 India Sq., Boston, Mass.

Hecla—See U. S. Specialty Co.

Her-Gen Mfg. Co., 57-59 E. 43rd St., Chicago, Ill.

Hicks Brush Co., Howard A., 826 18th St., Denver, Colo.

Hygenia Brush Co., Worcester, Mass. "Ideal."

Ideal—See Hygenia Brush Co.

Jonas, C. N., & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for Turbine Auto Washer Co., Three Rivers, Mich.)

Lampkin Mfg. Co., Gloyd Bldg., Kansas City, Mo.

Muller, Edward, 5031 Hudson Bld., West New York, N. J. "Reliable."

No-Mar—See American Textile Mfg. Co.

North Ridge Brush Co., 252 Clark St., Freeport, Ill.

O. K.—See Rippley Mfg. Co.

Osborne Mfg. Co., 5401 Hamilton Ave., N. E. Cleveland, O.

Peerless—See Tempco Mfg. Co.

Perfection—See Ryan & Long.

Persinger & Co., Builders Exchange, Minneapolis, Minn. "Allen."

Raban, W. A., Broad St., Port Chester, N. Y. "Westchester."

Reliable—See Muller, Edward.

Rennous, Kleinle & Co., 3221 Frederick Ave., Baltimore, Md. "Arkaco," "Fitsit."

Rich Mfg. Co., 69-71 Greene St., New York, N. Y. "Rico."

Rico—See Rich Mfg. Co.

Ripley Mfg. Co., Grafton, Ill. "O. K."

Ryan & Long, 343 College Ave., Appleton, Wis. "Perfection."

Sanitax Brush Co., 3335 S. Wabash Ave., Chicago, Ill.

Schaffer, N. S., 62 Vienna St., Rochester, N. Y. "Superior."

Smith & Co., Jos. N., 2461 E. Grand Blvd., Detroit, Mich.

Superior—See Schaffer, N. S.

Tempco Mfg. Co., 2227 Ogden Ave., Chicago, Ill. "Peerless."

Turbine Auto Washer Co.—See Jonas, C. & F. W.

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1-16"	1-16 x 1-16"	1-16"	1-16"	1-16 x 1-16"	1-16"
1-4"	5-16 x 1-4"	1-4"	1-4"	5-16 x 1-4"	1-4"
5-16"	1-8 x 1-8"	5-16"	5-16"	1-8 x 1-8"	5-16"
3-8"	1-8 x 1-8"	3-8"	3-8"	1-8 x 1-8"	3-8"
7-16"	11-16 x 11-16"	7-16"	7-16"	11-16 x 11-16"	7-16"
1-2"	11-16 x 11-16"	1-2"	1-2"	11-16 x 11-16"	1-2"
9-16"	13-16 x 13-16"	9-16"	9-16"	13-16 x 13-16"	9-16"
5-8"	13-16 x 13-16"	5-8"	5-8"	13-16 x 13-16"	5-8"
11-16"	1-4 x 1-4"	11-16"	11-16"	1-4 x 1-4"	11-16"
3-4"	1-4 x 1-4"	3-4"	3-4"	1-4 x 1-4"	3-4"
7-8"	17-16 x 17-16"	7-8"	7-8"	17-16 x 17-16"	7-8"
1"	5-16 x 5-16"	1"	1"	5-16 x 5-16"	1"

THE POSITIVE LOCK WASHER CO.,
BRANCHES

E. L. Van Winkle Co., San Francisco, Cal. Positive Lock Washer Co., Glasgow, Scotland

Newark, N. J.



POSITIVE

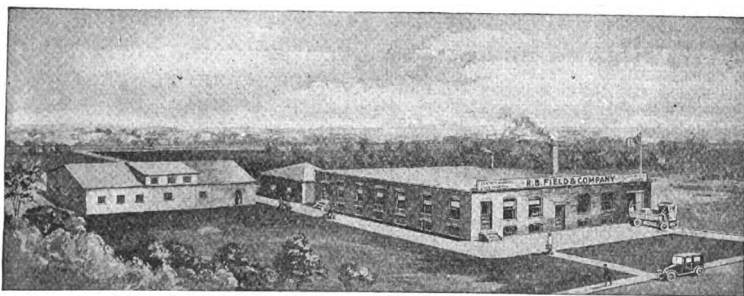


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Type B



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WASHERS, Vehicle (Continued)

U. S. Specialty Co., 97 Haverhill St., Boston, Mass. "Hecla."
 Vehicle Specialty Co.—See Famasco Distributing Co.
 Westchester—See Raban, W. A.
 Whiting—J. J. Adams Co., John L., Boston, Mass. (See page 165.)
 Wizard Washer & Wringer Works, 201 N. Peterboro St., Canastota, N. Y.

WASHING BRUSHES—See Washers, Vehicle**WASHING MACHINES, TIRE CHAIN—See Machines, Tire Chain Washing****WASTE CANS—See Cans, Waste****WASTE, Cotton***(For wiping rags—See Wipers)*

American Manufacturers Supply Co., 1401-15 Orleans St., Detroit, Mich.
 Autopak—Royal Mfg. Co.
 Basco—See Baylis Sanitary Supply Co.
 Baylis Sanitary Supply Co., 341 W. Superior St., Chicago, Ill. "Basco."
 Bishop Mfg. Co., Robert, 157 W. Sixth St. (S. Boston), Boston, Mass.
 Blakeley & Son, John, 1089 Germantown Ave., Philadelphia, Pa.
 Chicago Sanitary Rag Co., 2137-43 S. Loomis St., Chicago, Ill.
 Dumee Son & Co., 105-07 S. Third St., Philadelphia, Pa.
 Egan Waste Co., 19 Burling Slip, New York, N. Y.
 Empire Waste Corp., Stevens Bldg., Detroit, Mich.
 Estes Mills, Fall River, Mass.
 Fidelity—See Hagy Waste Works.
 Fulton Bag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.
 Gross & Co., E., 90-96 Avon St., Hartford, Conn.
 Hagy & Son, Clayton L., 16th & Carpenter Sts., Philadelphia, Pa.
 Hagy Waste Works, J. Milton, 836 S. Swanson St., Philadelphia, Pa. "Fidelity."
 Hoffman-Corr Mfg. Co., 318 Lafayette St., New York, N. Y.
 Interwoven Mills, Martinsburg, W. Va.
 Kanned Kotton—See Tepee Waste Co.
 Masco—See Massasoit Mfg. Co.
 Massasoit Mfg. Co., 134 Pocasset St., Fall River, Mass. "Masco."
 Mill Remnants Co., 19 Bond St., New York, N. Y.
 Mooers-Wright Co., 1400 Broadway, New York, N. Y. (Factory Sales Agents for Union Wadding Co., Pawtucket, R. I.) (See page 185.)
 Phillips, C. F., Little Bldg., Lincoln, Neb.
 Red-Roll—See Union Wadding Co.
 Riverside Mills, Tatnall & 11th Sts., Augusta, Ga.
 Royal Mfg. Co., Rahway, N. J. "Autopak." (See page 939.)
 S. A. W. Co.—See South Atlantic Waste Co.
 Snow Drift—See Sweetland Waste Co.
 South Atlantic Waste Co., N. Brevard St., Charlotte, N. C. "S. A. W. Co."
 Springfield Waste Co., Mill St., Springfield, Mass.
 Standard Waste Co., 3067 E. 61st St., Cleveland, O.

Standard Waste & Rag Co., 234 W. 27th St., New York, N. Y.
 Standard Waste Mfg. Co., 2306-10 N. American St., Philadelphia, Pa.
 Sweetland Waste Co., 134 Tudor St. (S. Boston), Boston, Mass. "Snow Drift."
 Tepee Waste Co., 19 Carteret St., Newark, N. J. "Kanned Kotton."
 Travers Twine & Cordage Co., 81 Warren St., New York, N. Y.
 Union Wadding Co., 66 Dexter St., Pawtucket, R. I. "Red-Roll."
 Wisconsin Textile By Products Co., Sibley Ct. & Calumet Ave., Sheboygan, Wis. "Wis-tex."
 Wistex—See Wisconsin Textile By Products Co.
 Wood Co., W. A., 373 Atlantic Ave., Boston, Mass.

WATCH HOLDERS—See Holders, Watch**WATCHES, Limousine***(See also Cases, Toilet and Card)*

Majestic—See Wittnauer Co.
 Waltham Watch Co., Waltham, Mass.
 Wittnauer Co., A., 30 W. 36th St., New York, N. Y. "Majestic."

WATCHMAN'S CLOCKS—See Clocks, Time Recording and Watchman's**WATER ALARMS—See Columns, Water****WATER CARRYING BAGS—See Bags, Water Carrying****WATER CIRCULATING PUMPS—See Pumps, Water Circulating****WATER CIRCULATING PUMPS, TRACTOR—See Pumps, Tractor Water Circulating****WATER CIRCULATING REGULATORS—See Regulators, Water Circulating****WATER CIRCULATION GAGES—See Gages, Water Circulation****WATER CIRCULATION REGULATING VALVES—See Valves, Water Circulation Regulating****WATER COLUMN MIRRORS—See Mirrors, Water Gage****WATER COLUMNS—See Columns, Water****WATER CONNECTIONS—See Connections, Brass Water****WATER COOLERS—See Radiators, Water Cooling****WATER, Distilled***(For use in Storage Batteries)*

Hires & Co., Chas. E., Philadelphia, Pa.
 Hykeia Distilled Water Co., New York, N. Y.
 Northwestern Distilled Water Co., 510 Dupont Ave., N., Minneapolis, Minn. (See page 939.)

Everything is listed under the NOUN or principal word



This is display cabinet No. 10

By actual engineering test, you get 60% greater gripping power when you use

NEVER SLIP



LOCK WASHER

The display stand shown above is in all good auto supply shops. There's a special, convenient box of assorted sizes for garages, etc. Ask about "Assortment No. 5"

Write for price lists and complete information
National Umbrella Frame Company
30th & Thompson Sts. Philadelphia, Pa.

ROYAL Autopak WASTE

**Standard for Quality
in the Handy 1-lb. Bale
for Automotive Use**

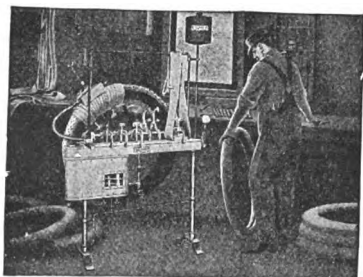
Made from choice selected materials. Refined and expertly mixed for maximum cleanness, absorbency and economy. Packed in the tidy pound bale for portability and convenience.

Dealers: Profit by the greatest advertising campaign ever launched on cotton waste.

Ask your jobber or us.



ROYAL MANUFACTURING CO
RAHWAY, N. J., U. S. A.



A Money - Maker for Every Garage

Progressive garage men everywhere are installing a SHALER Shop Vulcanizer and making big money. A SHALER will do all the work you care to do—and will vulcanize as many as 12 casings and 200 tubes a day. Yet it costs only about one-fifth as much as any other vulcanizer of equal capacity.

SHALER

Steam Vulcanizer

is the only vulcanizer that has Automatic Heat Control—cannot overcure or damage tires. Occupies small floor space. Uses the famous Wrapped-Tread Method of repairing casings—no experienced operators necessary. Your ordinary help can learn to operate it.

Ask Your Jobber - Write for Catalog

of the complete line of SHALER Vulcanizers—steam, gasoline, gas, dry fuel, alcohol and electric, for tire repair shops, garage and motorists' use.

C. A. SHALER COMPANY, 910 Fourth St., Waupun, Wis.

Pure Distilled Water H O

For Electric Storage Batteries

We Ship Everywhere.

**In Barrels, Kegs and
Glass Bottles.**

WRITE FOR PRICES

Established 1896

Northwestern Distilled Water Co.

510-516 Dupont Av. N., Minneapolis, Minn.

**We are the largest exclusive
manufacturers of Distilled
Water in the United States.**

WATER LEVEL REGULATORS—See Regulators, Water Level

WATER LINE GAGES—See Gages, Boiler Water

WATER PROOFING COMPOUNDS FOR COILS, FOR FORDS—See Paints, Coil Water Proofing

WATER PUMPS—See Pumps, Water

WATER REGULATING VALVES—See Valves, Water Circulation Regulating.

WATER STILLs—See Stills, Water

WATER TEMPERATURE INDICATORS—See Meters, Water Temperature Indicating

WAYS. Balancing

(For Balancing Machine—See Machine, Balancing)

Defiance Machine Works, 424 Perry St., Defiance, O.

Rockford Tool Co., 2410 Harrison Ave., Rockford, Ill.

WEARING APPAREL—See Clothing; also Gloves; also Leggings; also Mufflers

WEATHER STRIPS—See Strips, Wind Shield Weather

WEB STRAPS—See Straps, Web

WEBBING, COACH—See Lace, Coach

WEBBING COTTON—See Webbing, Jute and Cotton

WEBBING, Jute and Cotton

American Mills Co. of N. Y., 438 Broadway, New York, N. Y.

Buffalo Weaving & Belting Co., Buffalo, N. Y. (See page 941.)

Goss Co., J. C., 36 Woodbridge St. E., Detroit, Mich.

Hudson Narrow Fabric Co., Cherry St., Hudson, Mass.

Hope Webbing Co., 1005 Main St., Pawtucket, R. I.

Landers Bros. Co., Dept. A3, Toledo, O. (See page 263.)

Ludlow Mfg. Associates, 111 Devonshire St., Boston, Mass. (See page 941.)

Modern Belt & Web Co., Emerson Tower Bldg., Baltimore, Md.

Susquehanna Webbing Co., Fifth St., Bloomsburg, Pa.

Sutherland Leather & Felt Co., 743 Beaubien St., Detroit, Mich.

U-T-K—See Utica Suspender Co.

Utica Suspender Co., 1832 Sunset Ave., Utica, N. Y. "U-T-K."

WEDGE PLATES—See Plates, Demountable Rim Wedge

WELDERS' CLAMPS—See Clamps, Oxy-acetylene Welders

WELDERS' GOGGLES—See Goggles, Mechanics' and Welders'

WELDING, Autogenous

Admiral Welding Machine Co., 1607 Locust St., Kansas City, Mo.

Advance Welding Machine Co., 111 N. Desplaines St., Chicago, Ill.

Ajax Auto & Aero Sheet Metal Co., 419 W. 47th St., New York, N. Y.

American Welding Co., 2301 Olive St., St. Louis, Mo.

American Welding Co., 3011 S. Wabash Ave., Chicago, Ill.

Atlantic Welding Works, 30th & Callowhill Sts., Philadelphia, Pa.

Atlas Welding Works, 249-51 Union St., Elizabeth, N. J.

Atlas Welding & Supply Co., 2930 Penn Ave., Pittsburgh, Pa.

Birmingham Welding Co., 2200 First Ave. S., Birmingham, Ala.

Blanchette Welding Co., 149-51 S. Broadway, Denver, Colo.

Blickman, S., Nelson Ave. & Mount St., Long Island City, N. Y.

Bossert Corp., Utica, N. Y.

Bournonville Welding Co., Eug., 241-45 W. 64th St., New York, N. Y.

Brasing & Welding Co., 1615 Wabash Ave., Chicago, Ill.

Brooklyn Welding Co., 184-86 Adams St., Brooklyn, N. Y.

Buckeye Welding & Repair Shop, 133 Water St., Lima, O.

Busch-Hartman Co., 716 Golden Gate Ave., San Francisco, Cal.

Cambridge Welding Works, 51 Ames St., Cambridge, Mass.

Capitol Welding Co., 45-47 Sabin St., Providence, R. I.

Cave Welding & Mfg. Co., 32 Liberty St., Springfield, Mass. "Rego."

Central Ohio Welding Co., 200 E. Lynn St., Columbus, O.

Columbus Welding Shop, 733 N. Fourth St., Columbus, O.

Crosby Co., Buffalo, N. Y. (See page 813.)

Davis & Schegg Co., 302 Amsterdam Ave., New York, N. Y.

Day Welding Co., 48 Summer Ct., N. W., Washington, D. C.

Delcampe Welding Co., 1517 Wood Ave., Bridgeport, Conn.

Des Moines Welding Co., 117-19 Grand Ave., Des Moines, Ia.

Detroit Welding Specialty Co., 620 Beaubien St., Detroit, Mich.

Dyer Co., 155 Brookline St., Cambridge, Mass.

General Welding Co., 355-57 14th St., Hoboken, N. J.

Gibbs Welding Co., 12th & Locust Sts., Des Moines, Ia.

Globe Machine & Stamping Co., Cleveland, O. (See page 155.)

Great Lakes Welding Co., 937-45 West St., N. W., Cleveland, O.

Harlem Machine Co., 543 W. 127th St., New York, N. Y.

Hauck Mfg. Co., 126-34 Tenth St., Brooklyn, N. Y.

Havens Bros. Mfg. & Supply Co., 1622 Wazee St., Denver, Colo.

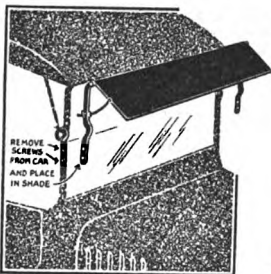
Heine Machine Works, 4160 Minnehaha Ave., Minneapolis, Minn.

Hercules Welding & Machine Co., 223-25 N. 16th St., Philadelphia, Pa.

Hoag Welding Co., 31 E. Court St., Springfield, Mass.

Hobble Welding Plant, Maple & Fourth Sts., Hampton, Ia.

Everything is listed under the NOUN or principal word



Two Quick-Selling Automobile Accessories

NO-GLARE SHADE FOR ALL CARS

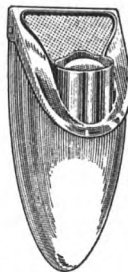
This new, patented Shade eliminates the blinding glare of the sun and insures clear vision in rain, fog and snow. Attached in two minutes. Can be adjusted at any angle from the driver's seat. Does not interfere with windshield.

Liberal Discounts to the Trade

THE O. MAURER COMPANY 1317 Bushwick Ave. BROOKLYN, N. Y.

AUTO ASH RECEPTACLE

Prevents ashes from being blown into the driver's eyes. Avoids accidents and injury to passengers' clothes and to upholstery. Keeps cigars, burnt match ends and ashes away from the floor of the car. Ornamental, safe, simple and sanitary. Easy to attach; easy to empty.



Ludlow Manufacturing Associates

Our Unequalled Facilities Insure
Quality . Service . Economy

JUTE WEBBING for AUTO TOPS

STANDARD BURLAP
All Widths and Weights

Your inquiries will receive prompt attention.

111 Devonshire Street
Boston 3 Mass.

Buffalo Weaving and Belting Co.

Buffalo, N. Y.

Spinners and Weavers

All Qualities Stay and Strainer
Webbs, Tire and Rebound Straps

Anti-Squeak Web

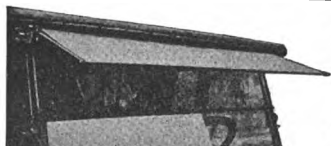
Ford Brake Lining

Floor Space:

250,000 Square Feet

12,000 Spindles

300 Looms



As It Appears When in Use

JOBBERs and DEALERs write for prices and discounts to the trade.

The Roberts Mfg. Co., New Haven, Conn.

Jaknife WINDSHIELD VISOR

The New Jaknife Windshield Visor

Made in sizes to fit any car.

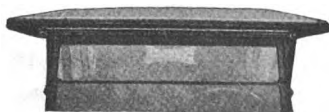
Folds out of sight when not in use.

Adjustable to any angle.

Bronze arms and brackets black enameled or nickel plated.

All metal Curtain Roller.

Best quality black top material used—underside finished in green.



As It Appears When Not in Use

Please mention The Automobile Trade Directory

WELDING, Autogenous (Continued)

Horgan Co., Paul, 1055-57 Atlantic Ave., Brooklyn, N. Y.
 Hub Machine, Welding & Contracting Co., 226 & Race Sts., Philadelphia, Pa.
 Imperial Welding Co., 2704 W. Jefferson Ave., Detroit, Mich.
 Ireland & Matthews Mfg. Co., Beard & Chatfield St., Detroit, Mich.
 K. G. Welding & Cutting Co., 556 W. 34th St., New York, N. Y.
 Kelso Welding Co., E. H., 1030 Francis St., St. Joseph, Mo.
 Keuka Industries, Inc., Hammondsport, N. Y.
 Kimball's, 137 Ashmun St., New Haven, Conn.
 Klinger Iron Works, 292 Flushing Ave., Brooklyn, N. Y.
 Laclede Iron Works, 1815 Chestnut St., St. Louis, Mo.
 Lawrence & Co., L., 292 Halsey St., Newark, N. J.
 Lionel Corp., 605-21 S. 21st St., Irvington, N. J.
 McCrea & Jones, 30 Catherine St., Utica, N. Y.
 Manufacturers Welding Co., 154 Berriman St., Brooklyn, N. Y.
 Master Welding & Cutting Corp., 1249 Holden Ave., Detroit, Mich.
 Messer Welding Supply Corp., 101-13 11th St., Brooklyn, N. Y.
 Metal Parts Mfg. Co., 1084 E. 152nd St., Cleveland, O.
 Metal Welding & Supply Co., 1440 Blake St., Denver, Colo.
 Metals Welding Co., 4400 Perkins Ave., Cleveland, O.
 Michaels & Mourre, 344 Amsterdam Ave., New York, N. Y.
 Milwaukee Cylinder Grinding Co., Wiel & Concordia Aves., Milwaukee, Wis.
 National Rubber & Specialties Co., 4423-39 Chickering Ave., Cincinnati, O.
 National Welding Co., 326-28 Dixwell Ave., New Haven, Conn.
 National Welding Co., 80 Dickerson St., Newark, N. J.
 National Welding & Mfg. Co., 1418-30 Niagara St., Buffalo, N. Y.
 Oregon Welding Machine Co., 305 Glisan St., Portland, Ore.
 Oxy-Acetylene Welding Co., 1921 Grand Ave., Kansas City, Mo.
 Oxy-Carbi Co., New Haven, Conn.
 Pacific Coast Welding Co., 610 E. Pike St., Seattle, Wash.
 Peerless Welding Co., 25 Stanhope St., Boston, Mass.
 Peerless Welding Co., 505 W. 45th St., New York, N. Y.
 Pioneer Welding Co., 610 E. Main St., Kalamazoo, Mich.
 Pittsburgh Reinforced Bracing & Machine Co., 2525 Liberty Ave., Pittsburgh, Pa.
 Pondelick Bros., 315 S. Leavitt St., Chicago, Ill.
 Portland Bracing & Machine Works, 266 Glisan St., Portland, Ore.
 Powell Welding Co., 143 Rogers Ave., Brooklyn, N. Y.
 Rego—See Cave Welding & Mfg. Co.
 Schaap Automobile Co., 344 Cumberland St., Brooklyn, N. Y. (See page 718.)
 Schemmel Welding Machine Works, Wapakoneta, O.
 Schweitzer Bros., 525 E. Pearl St., New York, N. Y.
 Smith-Hamburg-Scott Welding Co., 505 W. 57th St., New York, N. Y.
 Smith & Co., W. R., 304-06 W. 53d St., New York, N. Y.
 Sorenson, C., 18 E. 16th St., Chicago, Ill.

Standard Gas Products Co., 216 Ivy St., Atlanta, Ga.
 Standard Welding & Machine Co., 416 E. Second St., Des Moines, Ia.
 Sterling Engine Co., 333 S. Clinton St., Chicago, Ill.
 Superior Welding Co., 331 Knoxville Ave., Peoria, Ill.
 Superior Welding & Machine Co., 53 Canal St., Stamford, Conn.
 Trager Steam Copper Works, John, 447-57 W. 26th St., New York, N. Y. (See page 849.)
 Trindl Co., Wabash Ave. & 20th St., Chicago, Ill. (See page 637.)
 Twin City Welding Co., 213 Seventh Ave., S., Minneapolis, Minn.
 Vilter Mfg. Co., 879 Clinton St., Milwaukee, Wis.
 Vulcan Brazing & Machine Co., 2126-30 Race St., Philadelphia, Pa. (See page 637.)
 Waterbury Welding Co., 1147 South Main St., Waterbury, Conn. (See page 321.)
 Waterhouse Welding Co., 15 Pelham St., Boston, Mass.
 Weldrite Co., 100-04 Hunter Ave., Long Island City, N. Y.
 Western Drop Forge Co., Marion, Ind.
 Wilkes-Barre Welding & Machine Co., 23-30 E. Ross St., Wilkes-Barre, Pa.
 Worcester Pressed Steel Co., Worcester, Mass. (See page 811.)

WELDING COMPOUNDS—See Compounds, Welding**WELDING, Electric**

Beckley Perforating Co., North Ave., Garwood, N. J.
 Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
 Buckeye Welding & Repair Shop, 133 Water St., Lima, O.
 Central Ohio Welding Co., 200 E. Lynn St., Columbus, O.
 Cincinnati Ball Crank Co., Cincinnati, O. (See page 498.)
 Gem Stamped Steel Co., 16 Beach St., Everett, Mass.
 Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
 Ideal Welding Co., 510 Reading Rd., Cincinnati, O.
 McDowell Mfg. Co., Millvale Sta., Pittsburgh, Pa.
 Metal Parts Mfg. Co., 1084 E. 152nd St., Cleveland, O.
 Metal Welding & Supply Co., 1440 Blake St., Denver, Colo.
 Metzger Welding Co., 1652 Powers St., Cincinnati, O.
 Mirrorscope Co., E. 168th St. & Waterloo Rd., Cleveland, O.
 Pioneer—See Thomson Electric Welding Co.
 Standard Parts Co., Cleveland, O. (See pages 85, 119, 701 and 798.)
 Steel Products Co. (Michigan Plant), 773 Conant Ave., Detroit, Mich.
 Thomson Electric Welding Co., 166 Pleasant St., Lynn, Mass. "Pioneer."
 Turner Novelty Co., John C., Dayton, O.
 Williams & Co., J. H., 33 Richards St., Brooklyn, N. Y. (See page 963.)

WELDING FLUX—See Compounds, Welding

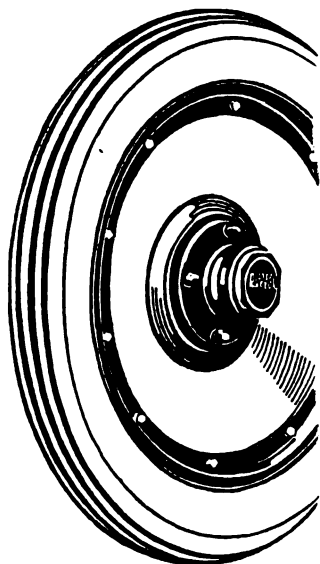
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DISTEEL WHEELS

*The Wheels that Complete
the Car*

When you see a car with wheels that don't wobble, you know they're Disteel Wheels. By holding the tires firm and true Disteel Wheels save tires and gasoline and prolong the life of your car.

The inwardly Curved Wheel is the Disteel Wheel.



DISTEEL WHEEL CORPORATION

DETROIT, U. S. A.

Disteel wheels are manufactured exclusively by the Detroit Pressed Steel Company at their new plant, Cabot Avenue, Detroit.

The Mount Elliott plant is devoted entirely to the making of pressed steel frames for the automotive industry. Correspondence is invited from quantity manufacturers of passenger cars, trucks, tractors and trailers.

*Send Your Blue Prints to Us or Let
Us Send a Representative to You*

DETROIT PRESSED STEEL COMPANY

DETROIT, U. S. A.

WELDING MACHINES—See *Machines, Electric Welding; also Machines, Autogenous Welding*

WELDING RODS—See *Rods, Welding*

WELDING TORCHES—See *Torches, Acetylene Brazing and Welding; also Machines, Autogenous Welding*

WELTS, UPHOLSTERY—See *Bindings, Upholstery*

WET TOOL GRINDERS—See *Grinders, Wet Tool*

WHEEL ALIGNING GAGES—See *Gages, Wheel Aligning*

WHEEL ATTACHMENTS for FORDS—See *Attachments, Tilting Wheel*

WHEEL BEARINGS for FORDS—See *Bearings, Front Wheel*

WHEEL BRUSHES—See *Washers, Vehicle*

WHEEL CARRIERS for FORDS—See *Holders, Spare Wheel*

WHEEL CLOCKS for FORDS—See *Clocks, Steering Wheel*

WHEEL DISCS for FORDS—See *Discs, Wheel*

WHEEL DRESSERS—See *Dressers, Emery Wheel*

WHEEL GAGES—See *Gages, Wheel Aligning*

WHEEL GRIPS—See *Grips, Tractor Wheels*

WHEEL HOLDERS—See *Holders, Spare Wheel*

WHEEL HUBS—See *Hubs, Wheel*

WHEEL PULLERS—See *Pullers*

WHEEL REMOVING CRANES—See *Cranes, Drags and Jacks, Truck Wheel Removing*

WHEEL REMOVING DRAGS—See *Cranes, Drags and Jacks, Truck Wheel Removing*

WHEEL RIMS—See *Rims, Wheel*

WHEEL TIGHTENING COMPOUNDS—See *Compounds—Wood Wheel Tightening*

WHEEL TRUCKS—See *Castors and Wheel Trucks*

WHEEL TRUEING TOOLS—See *Dressers, Emery Wheel*

WHEELS, CARBORUNDUM—See *Wheels, Grinding*

WHEELS, Cast Steel

American Steel Foundries, McCormick Bldg. Chicago, Ill.

Clark Equipment Co., Buchanan, Mich.

Dayton Steel Foundry Co., Dayton, O.
(See page 945.)

Michigan Malleable Iron Co., Detroit, Mich.

Hart-Parr Co., Lawler St., Charles City, Iowa.

Michigan Steel Casting Co., 1986 Guoin St., Detroit, Mich.

Singer Steel Casting Co., 37th Ave. & Mitchell St., Milwaukee, Wis.

Smith Wheel, Inc., Syracuse, N. Y.
(See page 945.)

Standard Steel Castings Co., Hickox Bldg. Cleveland, O.

West Steel Casting Co., 805-41 E. 70th St., Cleveland, O.

WHEELS, DEMOUNTABLE—See *Wheels, Metal Disc; also Wheels, Wood Disc; also Wheels, Demountable Wire*

WHEELS, DEMOUNTABLE, for Fords—See *Wheels, Metal Disc; also Wheels, Wood Disc; also Wheels, Demountable Wire. For Demountable Hubs—See Hubs, Demountable*

WHEELS, Demountable Wire

(For other types of Demountable Wheels—See *Wheels; Metal Disc; also Wheels, Wood Disc. For Non-Demountable Wire Wheels—See Wheels, Non-Demountable Wire*)

Dayton Wire Wheel Co., Big 4 & Miami Chapel Rd., Dayton, O.

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "Houk" and "House" Wire Wheels.) (See page 113.)

Hayes Wheel Co., Horton St., Jackson, Mich.

Houk—See *Wire Wheel Corp. of America.*

House—See *Wire Wheel Corp. of America.*

Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "Rudge-Whitworth."

Maryland Metal Products Co., Hagerstown, Md. "Pasco."

Pasco—See *Maryland Metal Products Co.*

Phelps Mfg. Co., Columbus, Ohio.

Rudge-Whitworth—See *Marlin-Rockwell Corp.*

Simplex Wire Wheel Co., Cadillac, Mich.
(See page 945.)

Stewart Wire Wheel Co., 601-37 W. Barner St., Frankfort, Ind.

Wire Wheel Corp. of America, 1700 Elmwood Ave., Buffalo, N. Y. "House," "Houk." (See 2nd page from inside Back Cover.)

WHEELS, Demountable Wire for Fords

(For other types of Demountable Wheels—See *Wheels, Metal Disc; also Wheels, Wood Disc. For Non-Demountable Wire Wheels—See Wheels, Non-Demountable, Wire*)

Budd Wheel Corp., 22d St. & Lehigh Ave. Philadelphia, Pa.

Dayton Wire Wheel Co., Big 4 & Miami Chapel Rd., Dayton, O.

Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for "House" Wire Wheels.)
(See page 113.)

Everything is listed under the NOUN or principal word



Smith Cushion Wheels

For Motor Trucks

Ride like Pneumatics. Simplest—only four parts. Lightest weight. Price about half that of other cushion wheels. Guaranteed for life of Truck.

Also Standard Type Solids and Pneumatics

SMITH WHEEL INC. SYRACUSE, N. Y.



Dayton Steel Truck Wheels

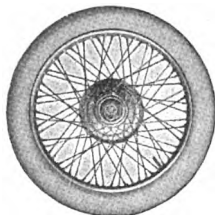
Dayton Steel Truck Wheels offer a combination of strength and symmetry that adds greatly to the service, life and appearance of the truck.

Remarkably light—made of electric furnace steel with the spokes gracefully arched into the rim, the weight of Dayton Steel Wheels compares favorably with built-up wheels for trucks of the same capacity.

THE DAYTON STEEL FOUNDRY CO.

Dayton, Ohio

THESE WILL PUT YOU RIGHT WITH YOUR TRADE



Simplex, the "Quicker-change wheel, is the most beautiful as well as the strongest wire wheel made. Hub-cap is integral part of wheel, which can be changed in a jiffy. The beauty, quality and price of Simplex wheels combine to make easy sales and big profits for dealers.

Write for big selling proposition

Live territory open. Export Department
Automotive Products Corp., New York City

SIMPLEX WIRE WHEEL COMPANY

CADILLAC

MICHIGAN

"SERVICE" IS OUR MIDDLE NAME

We Are Direct Manufacturer's Representatives

Engines, Transmissions, Universal Joints, Radiators, Sheet Metal Parts, Stampings (light or heavy) Castings (Aluminum, bronze, brass or malleable) Drop Forgings, Patterns (Wood or Metal) Automatic Screw Machine Products, etc., also:

THE DAYTON "DISCWOOD" WHEEL

(The Modern Equipment for Cars and Trucks)

Send us your Inquiries

CENTRAL SERVICE CORPORATION

1607 Merchants Bank Building

Indianapolis, Indiana

Please mention The Automobile Trade Directory

WHEELS, Demountable Wire for Fords (Continued)

House—See Wire Wheel Corp. of America.
 Marlin-Rockwell Corp., 347 Madison Ave., New York, N. Y. "Rudge-Whitworth."
 Maryland Metal Products Co., Hagerstown, Md. "Pasco."
 Pasco—See Maryland Metal Products Co.
 Phelps Mfg. Co., Columbus, Ohio.
 Rudge-Whitworth—See Marlin-Rockwell Corp.
 Simplex Wire Wheel Co., Cadillac, Mich. (See page 945.)
 Stewart Wire Wheel Co., 601-37 W. Barner St., Frankfort, Ind.
 Wire Wheel Corp. of America, 1700 Elmwood Ave., Buffalo, N. Y. "House."
 (See 2nd page from Inside Back Cover.)

WHEELS, DISC—See Wheels, Metal Disc; also Wheels, Wood Disc

WHEELS, Drop Forged

Jefferson Forge Products Co., Detroit, Mich. (See page 947.)

WHEELS, EMERGENCY—See Wheels, Special

WHEELS, EMERY—See Wheels, Grinding

WHEELS, Fifth

(For applying to the rear door of the car so that trailer can be mounted)

Borst Coupler Control Mfg. Co., Buffalo, N. Y.
 Martin Rocking Fifth Wheel Co., Springfield, Mass. (See page 959.)
 Shadbolt Mfg. Co., 68 Flushing Ave., Brooklyn, N. Y.
 Wolverine Truck-Trailer Co., 8931 Greeley St., Detroit, Mich.

WHEELS, Grinding

Abrasive Co. (Bridesburg), Philadelphia, Pa.
 Alundum—See Norton Co.
 American Emery Wheel Works, Waterman, East River & Pitman Sts., Providence, R. I.
 Bay State Emery Wheel Co., 3 Winter St., Worcester, Mass.
 Buffalo Emery Wheel Co., 127 Ash St., Buffalo, N. Y.
 Carborundum Co., Niagara Falls, N. Y.
 Chicago Wheel & Mfg. Co., 1101-03 W. Monroe St., Chicago, Ill.
 Cortland Grinding Wheel Co., Cortland, N. Y.
 Crystolon—See Norton Co.
 Detroit Grinding Wheel Co., Field & Jefferson Sts., Detroit, Mich. "Hart."
 Electric Emery Wheel Co., 827 Broad St., Newark, N. J.
 Hart—See Detroit Grinding Wheel Co.
 National Grinding Wheel Co., 2984 Main St., Buffalo, N. Y.
 Norton Co., 1 New Bond St., Worcester, Mass. "Crystolon," "Alundum."
 Pennsylvania Grinding Wheel Co., Wayne Junction, Philadelphia, Pa.
 Pike Mfg. Co., Pike, N. H.
 Pittsburgh Grinding Wheel Co., Rochester, Pa.
 Safety Emery Wheel Co., Springfield, O.
 Springfield Mfg. Co., 317 Mt. Grove St., Bridgeport, Conn.

Star Corundum Wheel Co., 241-51 Cavalry Ave., Detroit, Mich.
 Sterling Grinding Wheel Co., Tiffin, O. (See page 959.)
 Superior Corundum Wheel Co., 102 Felton St., Waltham, Mass.
 Vitrified Wheel Co., Westfield, Mass.
 Waltham Emery Wheel Co., 115 Bacon St., Waltham, Mass.
 Waltham Grinding Wheel Co., Waltham, Mass.

WHEELS, HEATED STEERING—See Warmers, Hand

WHEELS, LOCKING STEERING—See Locks, Automobile

WHEELS, LOCKING STEERING for FORDS—See Locks, Steering Gear

WHEELS, Metal Disc

(For Wood Disc Wheels—See Wheels, Wood Disc. For other Demountable Wheels—See also Wheels, Demountable Wire.)

Borland, J. Archie, Huntington, Ind.
 Budd Wheel Corp., 22d St. & Lehigh Ave., Philadelphia, Pa. "Michelin."
 Chicago Steel Wheel Co., Findlay, O.
 Deady—See Powell Pressed Steel Co.
 Detroit Pressed Steel Co., Detroit, Mich. "Disteel." (See page 943.)
 Disteel—See Detroit Pressed Steel Co.
 Forayth Bros. Co., Harvey, Ill. (See page 949.)
 Hall Syndicate, Inc., 1216-18 Liberty Bldg., Philadelphia, Pa. (See page 959.)
 Harvey Rim & Wheel Co., 25 Jewett Ave., Buffalo, N. Y. (See page 959.)
 Indestructible Wheel Co., Lebanon, Ind.
 La-Disc—See Lack Mfg. Co.
 Lack Mfg. Co., 1200 S. Third St., Paducah, Ky. "La-Disc."
 Medway Sales Corp., Baker Bldg., Racine, Wis.
 Michelin—See Budd Wheel Corp.
 Motor Wheel Corp. (Gler Pressed Steel Plant), Lansing, Mich. "Tuarc." (See page 803 and Front Cover.)
 Perfection Motor Parts Co., Lightner Bldg., Detroit, Mich.
 Powell Pressed Steel Co., Hubbard, O. "Deady." (See page 949.)
 Reliance Wheel Co., Federal Bldg., Youngstown, O.
 Robinson & Smithers, 5 Columbus Circle, New York, N. Y.
 Tuarc—See Motor Wheel Corp.

WHEELS, Metal Disc for Fords

(For Wood Disc Wheels—See Wheels, Wood Disc. For other Demountable Wheels—See also Wheels, Demountable Wire.)

Borland, J. Archie, Huntington, Ind.
 Detroit Pressed Steel Co., Detroit, Mich. "Disteel." (See page 943.)
 Disteel—See Detroit Pressed Steel Co.
 Globe Machine & Stamping Co., Cleveland, O. (See page 155.)
 Motor Wheel Corp. (Gler Pressed Steel Plant), Lansing, Mich. "Tuarc." (See page 803 and Front Cover.)
 Tuarc—See Motor Wheel Corp.

Everything is listed under the NOUN or principal word

Jefferson DROP FORGED Steel Wheels

for
Passenger Cars

**One Piece
Light in Weight
Indestructible**



Jefferson Drop Forged Steel Wheels are the result of co-ordinating two positively new principles of wheel making: **Unit Construction** and **Drop Forging**. The hub, brake-drum, spokes and felloe are drop-forged in one piece. There are no welds, bolts, rivets or joined sections. A high quality forging steel, of special analysis, is used.

Jefferson Drop Forged Steel Wheels are of spoked design, graceful in appearance, and may be finished in either paint or enamel.

They withstand the most severe road shocks and strains, are not affected by climatic conditions, retain their alignment and insure safety by eliminating wheel accidents.

They are guaranteed to last the life of any car on which they are used.

Literature Sent Upon Request



6 Throw Crankshaft—Forged in Position

Four Throw Crankshafts, Camshafts, Connecting Rods, Gear Blanks, Axles, Steering Knuckles, Steering Arms, Fly Wheels, Miscellaneous Automobile Forgings, Correctly Forged to specifications, and properly Heat Treated.

The Jefferson Forge Products Co.
DETROIT, MICHIGAN

WHEELS, Motor*(For converting ordinary bicycles into motor driven bicycles)*

Basco—See Briggs & Stratton Co.
Briggs & Stratton Co., Milwaukee, Wis.
 "Basco." (See page 343.)
 Johnson Motor Wheel Co., 908 E. Sample St.,
 South Bend, Ind.
 Rollaway Co., 517-19 Shepard St., Toledo, O.

WHEELS, Non-Demountable Wire*(For Demountable Wire Wheels—See Wheels, Demountable Wire.)*

Grant Wire Wheel Mfg. Co., 865 W. North
 Ave., Chicago, Ill.
 Mott Wheel Works, Jackson, Mich.

WHEELS, Non-Demountable Wire for Fords*(For Demountable Wire Wheels—See Wheels, Demountable Wire.)*

Grant Wire Wheel Mfg. Co., 865 W. North
 Ave., Chicago, Ill.
 Mott Wheel Works, Jackson, Mich.

WHEELS, PNEUMATIC—See Wheels, Special**WHEELS, Special Pneumatic, Spring and Emergency**

American Cushion Wheel Co., 7956 S. Chicago
 Ave., Chicago, Ill.
 Atlas Wheel Co., Kirby Bldg., Cleveland, O.
 Autocraft Corp., 126 State St., Boston, Mass.
 "Monarch."
 Cameron Spring Wheel Co., 622 Brainerd St.,
 Detroit, Mich.
 Constant Auto Wheel Co., 619 Vermont St.,
 Lawrence, Kans. "Modlin."
 Cornfield Wheel Co., 1540 Ann Pl., Detroit,
 Mich.
 Erickson Tire Corp., 159-61 25th St., Brook-
 lyn, N. Y.
 Gray Bros., 321 S. La Salle St., Chicago, Ill.
 Houston—See Pressed Steel Pneumatic Wheel
 Co.
 Jaxon Steel Products Co., Jackson, Mich.
 Kunz Wheel Co., 2601 Vlelt St., Milwaukee,
 Wis.
 Martin Cushion Wheel Co., 311-13 N. San-
 gamon St., Chicago, Ill.
 Mead—See National Gear & Truck Wheel
 Corp.
Midwest Engine Co., Indianapolis, Ind.
 "Stopshok." (See page 14.)
 Modlin—See Constant Auto Wheel Co.
 Monarch—See Autocraft Corp.
 Morand Cushion Wheel Co., 800-902 S. May
 St., Chicago, Ill.
 Motorist Spring Wheel Co., 505 Fifth Ave.,
 New York, N. Y.
 National Gear & Truck Wheel Corp., 405 Ful-
 ton Bldg., Pittsburgh, Pa. "Mead."
 National Wheel Co., Wausau, Wis.
**Peck Wheel Co., 3121 Michigan Ave., Chi-
 cago, Ill.**

Pneumatic Disc Wheel Co., 102 N. Eighth St.,
 Richmond, Va.

Prather Wheel Mfg. Co., 427 Temple Ave., De-
 troit, Mich.

Pressed Steel Pneumatic Wheel Co., Farmers
 Bank Bldg., Pittsburgh, Pa. "Houston."

Rech-Marbaker Co., Eighth St. & Girard Ave.,
 Philadelphia, Pa. "Sendelbach."

Resilient Safewheel Co., 1829 Cypress St.,
 Oakland, Cal.

Robertson Resilient Wheel Corp., 53 W. Jack-
 son Blvd., Chicago, Ill.

Schick Wheel & Tire Co., 89 Indiana Ave.,
 Wheeling, W. Va.

Smith Wheel, Inc., Syracuse, N. Y.
 (See page 945.)

Sendelbach—See Rech-Marbaker Co.

Sewell Cushion Wheel Co., 6468 Gratiot Ave.,
 Detroit, Mich.

Stopshok—See Midwest Engine Co.

Watson Wheel & Rim Corp., Hippodrome
 Bldg., Cleveland, O.

WHEELS, SPRING—See Wheels, Special Pneumatic, Spring and Emergency**WHEELS, STEEL—See Wheels, Metal Disc; also Wheels, Steel Spoked; also Wheels, Cast Steel; also Wheels, Tractor Steel****WHEELS, Steel Spoked**

All-Steel Wheel Co., Philadelphia, Pa.
 Custer Pressed Steel Wheel Co., 112 Holley
 Ave., Bradford, Pa.
 Parker Wheel Co., 3778 E. 78th St., Cleveland,
 Ohio.
 Rey Wheel Co., 1438 Washington Blvd., De-
 troit, Mich.
 Van Wheel Corp., 336 Temple St., Syracuse,
 N. Y.

WHEELS, STEEL TRACTOR—See Wheels, Tractor Steel**WHEELS, Steering***(Including Tilting Steering Wheels; for Rims only—See Rims, Rubber; also Rims, Wood Steering Wheel; For Heated Wheels—See Wheels, Heated Steering)*

Allerding Products Co., 209 N. Main St., Man-
 field, O.

American Metal Products Co., 6431-61
 Epworth Blvd., Detroit, Mich.
 (See page 913.)

American Wood Rim Co., Onaway, Mich.
 (See page 965.)

E-Z—See Gemco Mfg. Co.

F. M. F.—See Sav-a-Life Fender Co.

Fold-O-Lock Steering Wheel Co., 114-16 S.
 Lawrence Ave., Wichita, Kans.

Gemco Mfg. Co., 666 S. Pierce St., Mil-
 waukee, Wis. "E-Z." (See page 167.)

Hartzell Steering Wheel Co., Piqua, O.

K. & S. Mfg. Co., 2644 S. Western Ave., Chi-
 cago, Ill.

More-Room—See Neville Steering Wheel
 Mfg. Co.

Neville Steering Wheel & Mfg. Co., 602 Norr-
 st., Wayne, Mich. "More-Room."

Pouvaillsmith Corp., Smith St., Poughkeeps-
 N. Y. "Povasco."

Everything is listed under the NOUN or principal word

"The Wheel That Stands the Shock"

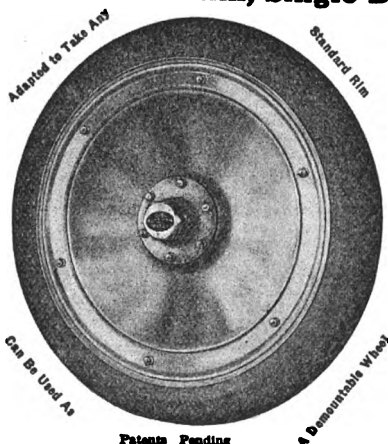
Forsyth Demountable Rim, Single Disc Wheel

Light Weight

The Forsyth Wheel is made to take any standard demountable rim which can be quickly applied or removed from the disc of the wheel.

Mass Construction

After years of careful study and development, we discovered several principles in metal wheel construction. Our aim was to avoid using simply a mass of "dead" metal and unnecessary weight.



Increased Strength

Therefore, only four wheels are required, thus saving weight and expense.

Shock Absorption

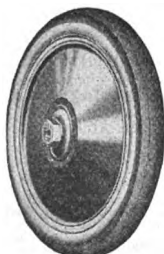
We were after a "live" wheel, which would immediately respond to and absorb shocks throughout the structure as a whole, instead of locally at any point. We obtained this result with a low peripheral weight.

Forsyth Brothers Company, Harvey, Ill.

We also make Frames, Brake Drums, and other pressings

The Greatest Disc Wheel Achievement!

DEADY DUAL DISC WHEELS



Patent Applied for

A WHEEL of surpassing beauty and strength, made of two separate discs, requiring merely the unscrewing of the large center nut to effect the quickest tire change that has ever been possible since the invention of the automobile. This now makes possible the use of standard straight side or clincher rims with disc wheels.

A special feature of this wheel is the inflation of tire at the hub nut retainer ring on the outside. This does not detract from beauty of wheel. Extra wheel unnecessary—only extra rim needed. Smallest number of parts of any wheel made.

Send for complete information describing all details of
DEADY DUAL Disc Wheels

Manufactured and Sold only by

The
POWELL
PRESSED STEEL CO.
HUBBARD, OHIO
SUBURB OF
YOUNGSTOWN

Please mention The Automobile Trade Directory

WHEELS, Steering (Continued)

Poyasco—See Pouvalamith Corp.
 Rastetter & Sons, Louis, Nelson & Wall Sts., Fort Wayne, Ind.
 Reese Machine & Tool Works, 224-30 W. Main St., Plymouth, Pa.
 Say-a-Life Fender Co., Guardian Bldg., Cleveland, O. "F. M. F."
 Tiltlok Steering Wheel Corp., 500 Howard St., Detroit, Mich.

WHEELS, Steering, for Fords

(Including large and tilting wheels; for Heated Wheels—See Wheels, Heated.)

American Metal Parts Mfg. Co., Milwaukee, Wis.
 American Wood Rim Co., Onaway, Mich. (See page 965.)
 Au-to Compressor Co., 308 S. Mulberry St., Wilmington, O. "Ore."
 Badger Mfg. Corp., Milwaukee, Wis. "Saf-Lock." (See page 171.)
 Becco—See Michigan Motor Specialties Co.
 De Luxe—See Decker Co.
 Decker Co., Richard M., 2909 Indiana Ave., Chicago, Ill. "De Luxe."
 E-Z—See Gemco Mfg. Co.
 Fulton Co., 75th & National Aves., Milwaukee, Wis. (Distributors.) (See pages 569 to 574.)
 Gemco Mfg. Co., 634 S. Pierce St., Milwaukee, Wis. "E-Z." (See page 167.)
 Hasco—See Howard Auto Specialties Co.
 Howard Auto Specialties Co., Swampscott, Mass. "Hasco."
 Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
 More-Room—See Neville Steering Wheel & Mfg. Co.
 Neville Steering Wheel & Mfg. Co., 602 Norris St., Wayne, Mich. "More-Room."
 Oro—See Au-To Compressor Co.
 Rastetter & Sons, Louis, Nelson & Wall Sts., Fort Wayne, Ind.
 Saf-Lock—See Badger Mfg. Corp.
 Spencer Metal Products Co., Spencer, O.
 Stout's Mfg. Co., Lockport, N. Y.
 Tiltlok Steering Wheel Corp., 500 Howard St., Detroit, Mich.
 W-A—See Whetstone & Co.
 Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

WHEELS, TILTING—See Wheels, Steering

WHEELS, Tractor Steel

Electric Wheel Co., 28th & Cedar Sts., Quincy, Ill.
 Empire Mfg. Co., 615½ Hampshire St., Quincy, Ill.
 Flour City Ornamental Iron Co., Minneapolis, Minn.
 French & Hecht, Third & Farnum Sts., Davenport, Ia.
 Geneva Metal Wheel Co., Geneva, O.
 Grid-Iron-Grip Co., Safety Bldg., Rock Island, Ill.
 Hoosier Wheel Co., Shelby Rd. & Big Four R. R., Franklin, Ind.
 Mansfield Steel Corp., 954 E. Milwaukee Ave., Detroit, Mich.
 Mastodon—See Standard Steel Castings Co.
 P. T.—See Wharton, Jr., & Co.
 Peru Plow & Wheel Co., Peru, Ill.

Reliance Wheel Co., Federal Bldg., Youngstown, O.
 Standard Parts Co., Cleveland, O. (See pages 85, 119, 701 and 798.)
 Standard Steel Castings Co., Hickox Bldg., Cleveland, O. "Mastodon."
 W & K—See Whitehead & Kales Co.
 Wharton, Jr., & Co., Wm., Easton, Pa. "P. T."
 Whitehead & Kales Co., Michigan & Beecher Sts., Detroit, Mich. "W & K"

WHEELS, TRUCK—See Wheels, Cast Steel; also Wheels, Wood

WHEELS, WIRE—See Wheels, Demountable Wire; also Wheels, Non-Demountable Wire

WHEELS, Wood

Acorn—See Crane & MacMahon.
 Archibald Wheel Co., 148 West St., Lawrence, Mass.
 Baltimore Hub Wheel & Mfg. Co., Baltimore, Md. (See page 503.)
 Blitt Wood—See Hoopes, Bro. & Darlington.
 Bimel Spoke & Auto Wheel Co., Portland, Ind. (See page 953.)
 Central Service Corp., 1607 Merchants Bank Bldg., Indianapolis, Ind. (Sales Representatives.) (See page 945.)
 Chicago Wheel & Rim Co., 2010 S. Wabash Ave., Chicago, Ill.
 Crane & MacMahon, St. Marys, O. "Acorn," "Hickory Nut."
 Dayton Automotive Wheel Co., Huffman St. & Linden Ave., Dayton, O.
 Eberly & Orris Mfg. Co., Mechanicsburg, Pa.
 Empire Wheel Works, 610 South St., Utica, N. Y.
 Evans-Lawrie Co., 752 Commonwealth Ave., Boston, Mass. (Eastern Distributors for Hayes Wheels.) (See page 113.)
 Harris Co., Union St., Easthampton, Mass.
 Hayes Wheel Co., Horton St., Jackson, Mich.
 Hickory Nut—See Crane & MacMahon.
 Hoopes, Bro. & Darlington, West Chester, Pa. "Blitt Wood."
 Imperial Wheel Co., Richfield Rd., Flint, Mich.
 Jones & Co., Phineas, 305 Market St., Newark, N. J.
 Kelsey Wheel Co., Detroit, Mich. (See page 953.)
 Meeker Mfg. Co., Linden & Huffman Aves., Dayton, O.
 Merrill, F. S., 2 Oakland St., Amesbury, Mass.
 Motor Wheel Corp., Lansing, Mich. (See pages 803 and Front Cover.)
 Muncie Wheel Co., Ohio Ave. & Dudley St., Muncie, Ind.
 Mutual Wheel Co., 729 Third Ave., Moline, Ill. (See page 953.)
 Northern Wheel Co., Alma, Mich.
 Novelty Carriage Works, 813 Second Ave., Spokane, Wash.
 Royer Wheel Co., Aurora, Ind. (See page 951.)
 Schwarz Wheel Co., Margaret St., & Penna. R. R., Philadelphia, Pa.
 Smith & Co., Geo. W., Philadelphia, Pa. "Woodisk." (See page 951.)
 Standard Wheel Co., 13th & Plum Sts., Terre Haute, Ind.
 Stone Mfg. Co., 1502 Michigan Ave., Chicago, Ill.
 Wayne Wheel Co., Newark, N. Y.
 Wheel & Wood Bending Co., 141 John St., Bridgeport, Conn.
 Woodisk—See Smith & Co.

Everything is listed under the NOUN or principal word

THE ROYER WHEEL CO.

AUTOMOTIVE WOOD WHEELS

TRUCK WHEELS

For All Sizes

Giant Pneumatic and Solid Tires

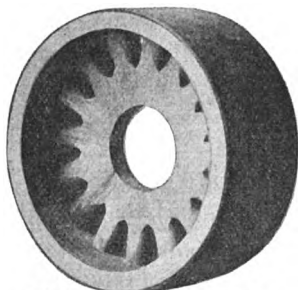
PASSENGER CAR WHEELS

All Types Including

Metal Felloe Wheels

FORD WHEELS

Regular Clincher and Demountable Rim Wheels,
also Demountable Rim and Solid Ford Truck Wheels



THE BEST WHEELS

Send Us Your Specifications

THE ROYER WHEEL CO.

ESTABLISHED 1848

AURORA, INDIANA

SMITH WOODISK WHEELS

REG. U. S. PATENT OFFICE

are made up of various layers of laminated wood, the grain of which runs in different directions—the principle being that now common in airplane construction.

Smith Woodisk Wheels add beauty to the car, have all the strength of the steel disk wheels, but are more elastic, better shock absorbers and therefore quieter in operation.

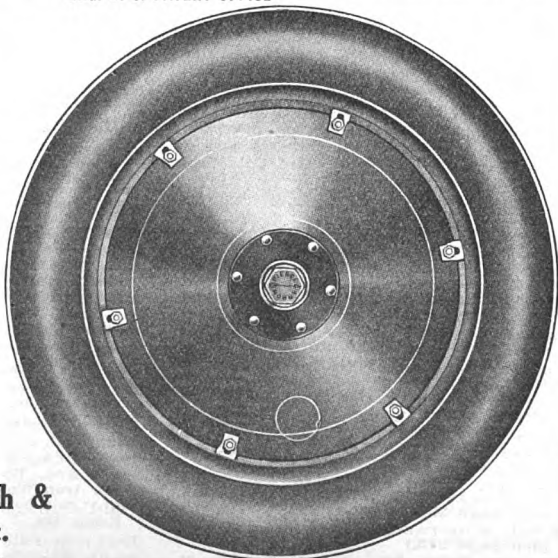
They require no special hub nor is it necessary to carry an entire spare wheel; they do not warp, twist or squeak.

Smith Woodisk Wheels are impervious to moisture; easily mounted and demounted and tires are inflated from the front without difficulty.

For Passenger Cars
and Trucks

Send for Booklet

**George W. Smith &
Company, Inc.**
PHILADELPHIA, PA.



Please mention The Automobile Trade Directory

WHEELS, Wood, for Fords

(For Demountable Wheels—See *Wheels, Demountable*)

Baltimore Hub Wheel & Mfg. Co., Baltimore, Md. (See page 503.)
 Bilt-Wood—See Hoopes Bros. & Darlington.
 Crane & MacMahon, St. Marys, O.
 Eames & Co., A. M., Framingham, Mass.
 Evans-Lawrie Co., 782 Commonwealth Ave., Boston, Mass. (Eastern Distributors for Hayes Wheels.) (See page 113.)
 Hayes Wheel Co., Horton St., Jackson, Mich.
 Hoopes Bros. & Darlington, West Chester, Pa. "Bilt-Wood."
 Imperial Wheel Co., Richfield Rd., Flint, Mich.
 Motor Wheel Corp., Lansing, Mich. (See page 808 and Front Cover.)
 Muncie Wheel Co., Ohio Ave. & Dudley St., Muncie, Ind.
 Mutual Wheel Co., 720 Third Ave., Moline, Ill. (See page 953.)
 Northern Wheel Co., Alma, Mich.
 Presto Inter-Rim Co., 940 Commonwealth Ave., Boston, Mass.
 Royer Wheel Co., Aurora, Ind. (See page 951.)
 Schwarz Wheel Co., Margaret St., & Penna. R. R., Philadelphia, Pa.
 Smith & Co., Geo. W., Philadelphia, Pa. "Woodisk." (See page 951.)
 Standard Wheel Co., 13th & Plum Sts., Terre Haute, Ind.
 Woodisk—See Smith & Co.

WHEELS, Wood Disc

(For Metal Disc Wheels—See *Wheels, Metal Disc*.
 For other Demountable Wheels—See also *Wheels, Demountable Wire*.)

Dayton Automotive Wheel Co., Huffman St. & Linden Ave., Dayton, Ohio. "Discwood."
 Discwood—See Dayton Automotive Wheel Co.

WHEELS, Wood Disc for Fords

(For Metal Disc Wheels—See *Wheels, Metal Disc*.
 For other Demountable Wheels—See also *Wheels, Demountable Wire*.)

Dayton Automotive Wheel Co., Huffman St. & Linden Ave., Dayton, Ohio. "Discwood."
 Discwood—See Dayton Automotive Wheel Co.
 Pennsylvania Hardware & Paint Co., Woolworth Bldg., New York, N. Y.

WHIPCORD, Upholstery

American Mills Co., 395 Broadway, New York, N. Y.
 American Woolen Co. of N. Y., 235 Fourth Ave., New York, N. Y.
 Laidlaw Co., 16 W. 40th St., New York, N. Y. (See pages 259 and 273.)
 Ray Woolen Co., 500 Broadway, Watervliet, N. Y.
 Seamans & Cobb Co., 140 Essex St., Boston, Mass. "Seaco."
 Seaco—See Seamans & Cobb Co.
 Strong Textile Co., 245 W. 55th St., New York, N. Y. (See page 257.)
 Terhune, Yereance & Wolff, 215 Fourth Ave., New York, N. Y. (Mill Agents.) (See page 303.)
 Toledo Auto Fabrics Co., Toledo, O. (See page 273.)
 Waterloo Woolen Mfg. Co., 238 E. Main St., Waterloo, N. Y.

WHISTLES, EXHAUST—See *Horns, Exhaust*

WHISTLES, EXPLOSION—See *Horns, Exhaust*

WICKER SEATS—See *Seats, Auxiliary*

WICKING, Candle

Estes Mills, Fall River, Mass. "Sterling."
 La Favorite—See Lees Mfg. Co.
 Lees Mfg. Co., 320 Broadway, New York, N. Y. "La Favorite," "Octagon."
 Octagon—See Lees Mfg. Co.
 Sterling—See Estes Mills.
 Westport Mfg. Co., Fall River, Mass.

WICKING, Felt Lubricator

(For Sheet Felt—See *Felt, Sheet*; for Felt Washers—See *Washers, Felt*)

Advance Felt & Cutting Co., 315 E. Jefferson St., Chicago, Ill. (See page 373.)
 American Felt Co., 100 Summer St., Boston, Mass. (See page 373.)
 Atlantic Felt Cutting Co., 93rd St. & Fourth Ave., Brooklyn, N. Y.
 Booth Felt Co., 463-72 19th St., Brooklyn, N. Y. (See page 375.)
 Brawley, T. R., 272-74 20th St., Brooklyn, N. Y. (See pages 375 and 385.)
 Felters Co., Millbury, Mass. (See page 933.)
 Lyons Felt Co., 338 Myrtle Ave., Brooklyn, N. Y.
 Western Felt Works, 4031-4115 Ogden Ave., Chicago, Ill.

WICKING, LUBRICATOR—See *Wicking, Felt Lubricator*

WICKS, Lamp

Lees Mfg. Co., 320 Broadway, New York, N. Y.
 Octagon—See Lees Mfg. Co.

WINCHES and BLOCKS, Car Extracting

(Devices for pulling cars out of mud or sand)

Alsteel Mfg. Co., 7-9 Carlyle St., Battle Creek, Mich. "Auto-Lad."
 Auto Accessories Co., Wheeling, W. Va. "Haberstick."
 Auto Bed Camp Mfg. Co., 3307 Pennsylvania St., Kansas City, Mo. "Dublervia."
 Auto Climb Out & Shovel Co., Havenrich Bldg., Saginaw, Mich.
 Auto Extractor Mfg. Co., 41 S. 15th St., Philadelphia, Pa.
 Auto-Lad—See Alsteel Mfg. Co.
 Auto Traction Trac Co., Berlin, N. J.
 Cherry—See Laurent-Cherry Pulley Block Co.
 Dublervia—See Auto Bed Camp Mfg. Co.
 Erie Hoist Co., 203 E. 21st St., Erie, Pa.
 Haberstick—See Auto Accessories Co.
 Keepers, J. C., 213 W. Park St., Olathe, Kans.
 Laurent-Cherry Pulley Block Co., 110 Lafayette Ave., Trenton, N. J. "Cherry."
 Pekor Iron Works, Columbus, Ga.
 Pull-U-Out Products Co., 727 Clark Ave., St. Louis, Mo.
 Rost Auto Puller Co., Rosemont, Neb.
 Smith Mfg. Co., C. F., 530 S. First St., De Kalb, Ill.

Everything is listed under the NOUN or principal word

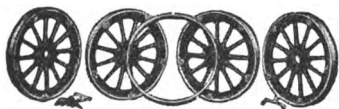


"Indiana Second Growth Wheels"

are made for
the smallest passenger car up
to the largest truck.

BIMEL SPOKE & AUTO WHEEL COMPANY
PORTLAND, IND.

Wood Automobile Wheels for PASSENGER CARS



Full line of wood wheels for Ford Cars and Ford Trucks, carried in stock.

Wheels shipped same day orders are received.

We use hickory wood in our construction. Do not substitute oak, ash, elm or birch.

Real Service and Quality

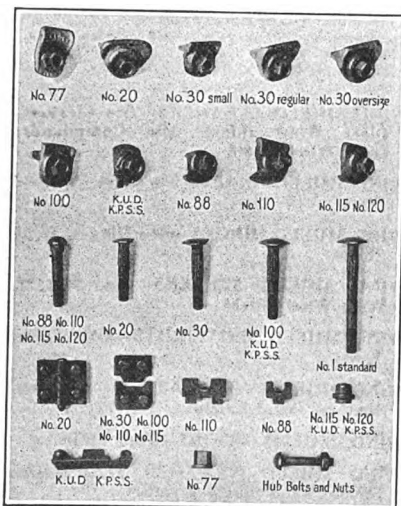
Trial Order will convince you that our Service excels all others.

MUTUAL WHEEL COMPANY
729 Third Ave., Moline, Ill.

KELSEY ACCESSORIES

Fully Covered by Patents

All Clamps and Wedges Show Patent Number or Date



Immediate delivery of the genuine parts can be made by our distributors:

Standard Tire & Rubber Co.,
104 Portland St.,
Boston, Mass.

Jacob Mattern & Sons, Inc.,
215 West 53rd St.,
New York City

Motor Rim Mfg. Company,
1835 E. 24th St.,
Cleveland, Ohio

Chicago Wheel & Rim Co.,
2010 Wabash Avenue,
Chicago, Ill.

Kansas City Wheel & Rim Co.,
1522 Grand Ave.,
Kansas City, Mo.

Kenton Tire & Rubber Co.,
San Francisco, Oakland and Los Angeles, Calif.;
Seattle, Wash.; Portland, Ore.

KELSEY WHEEL CO., Inc.
DETROIT **MICHIGAN**

WINCHES, Truck

(For applying to trucks to facilitate loading; for Truck Cranes—See Cranes, Truck.)

Bay City Foundry & Machine Co., 1610 Water St., Bay City, Mich. (See page 955.)

Brownhoist—See Brown Hoisting Machinery Co.

Brown Hoisting Machinery Co., 4403 St. Clair Ave., Cleveland, O. "Brownhoist."

Channon Mfg. Co., James H., 223-33 W. Erie St., Chicago, Ill.

Erie Hoist Co., 203 E. 21st St., Erie, Pa.

Hendrickson Truck Crane Co., Peoples Gas Bldg., Chicago, Ill.

Hummel Mfg. Co., 3014 La Salle St., St. Louis, Mo. (Central Western Sales Representatives for Mead-Morrison Winches. (See page 143.)

Mead-Morrison Mfg. Co., 1035 Prescott St. (E. Boston), Boston, Mass.

Memphis Pullblock Co., 933 Union Ave., Memphis, Tenn.

Silent Hoist Co., 302-04 McDougall St., Brooklyn, N. Y.

WIND SHIELD CLEANERS—See Cleaners, Glass Wind Shield; also Compounds, Glass Wind Shield

WIND SHIELD GLASS—See Glass, Polished Plate

WIND SHIELD HINGES—See Hinges, Wind Shield

WIND SHIELD SCREENS—See Screens, Wire Wind Shield

WIND SHIELD SPOTLIGHTS—See Lights, Spot

WIND SHIELD VENTILATORS—See Ventilators, Wind Shield

WIND SHIELD VISORS—See Visors

WIND SHIELD WEATHER STRIPS—See Strips, Wind Shield Weather

WIND SHIELD WINGS—See Shields, Auxiliary Wind

WIND SHIELD WIPERS—See Cleaners, Glass Wind Shield

WIND SHIELDS—See Shields, Wind

WINDINGS, ARMATURE—See Windings, Starter and Ignition

WINDINGS, FIELD COIL—See Windings, Starter and Ignition

WINDINGS, MAGNETO—See Windings, Starter and Ignition

WINDINGS, Starter and Ignition

Acme Wire Co., 1255 Dixwell Ave., New Haven, Conn.

Armature Rewinding Co., 3537 Bell Ave., St. Louis, Mo. (See page 955.)

Belden Mfg. Co., 2300 S. Western Ave., Chicago, Ill. (See page 187.)

Continental Armature Works, 1426 S. Wabash Ave., Chicago, Ill. (See page 955.)

Dudlo Mfg. Co., Wall St., Fort Wayne, Ind. Illinois Starter & Magneto Co., 2450 Calumet Ave., Chicago, Ill.

Magneto Winding Co., 1723 Eighth Ave., Brooklyn, N. Y.

National Generator & Magneto Co., 2318 Cottage Grove Ave., Chicago, Ill.

U. S. Auto Supply Co., 3945-49 S. Wabash Ave., Chicago, Ill. (See page 955.)

WINDOW ANTI-RATTLERS—See Anti-Rattlers, Window

WINDOW GLASS—See Glass, Polished Plate

WINDOW REGULATORS—See Regulators, Window

WINDOWS, CURTAIN—See Windows, Glass Curtain

WINDOWS, CURTAIN, FOR FORDS—See Lights, Curtain

WINDOWS, Glass Curtain

(Bevel glass window with metal and wood frame for use in place of celluloid lights in top curtains)

A. L. Z.—See Auto Curtain Glass Co. Auto Curtain Glass Co., 333 Shrewsbury St., Worcester, Mass. "A. L. Z."

Badger—See Wisconsin Top Co.

Brite Lite—See Lite-Products Corp.

Campbell Co., A. S., 161 Prospect St. (E. Boston), Boston, Mass. "Cello."

Cello—See Campbell Co.

Classic—See Smith & Co.

Economy—See Perfection Co.

Grip-Tite—See Soss Mfg. Co.

H & B—See Holmes & Bostrom Bros.

Holmes & Bostrom Bros., 365-67 17th Ave., Milwaukee, Wis. "H. & B."

Ideal—See Metal Stamping Co.

Johnston Mfg. Co., William R., 451-69 E. Ohio St., Chicago, Ill. (See page 437.)

K. & S. Mfg. Co., 2544 S. Western Ave., Chicago, Ill.

Kantleak—See Scherer & Co.

Lite-Products Corp., 9 W. Kinzie St., Chicago, Ill. "Brite Lite," "Tite-Lite."

Metal Stamping Co., Long Island City, N. Y. "Ideal." (See page 168.)

Perfection Auto Window Co., 6527 Featherstone St., Culver City, Cal.

Perfection Co., 400 W. Ohio St., Chicago, Ill. "Economy."

Powers Mfg. Co., Waterloo, Iowa. (See page 530.)

Scherer & Co., H., 440 E. Jefferson Ave., Detroit, Mich. "Kantleak."

Smith & Co., Jos. N., 2461-91 E. Grand Blvd., Detroit, Mich. "Classic."

Soss Mfg. Co., Grand Ave. & Bergen St., Brooklyn, N. Y. "Grip-Tite."

Snaplock Co., Guardian Bldg., Cleveland, O.

Stewart Mfg. Corp., 4500 Fullerton Ave., Chicago, Ill.

Stewart-Warner Speedometer Corp., Chicago, Ill. (See page 589.)

Ten Elck, Cornelius, 253 W. 47th St., New York, N. Y. (Distributor) (See page 81.)

Tite-Lite—See Lite-Products Corp.

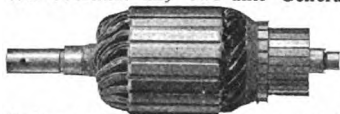
United Glass & Glazing Co., 660 Golden Gate Ave., San Francisco, Cal.

W. B.—See Wildenberg Bros.

Everything is listed under the NOUN or principal word

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We overhaul any two-unit Generator or Starting Motor for \$5.00 plus parts. We rewind any two-unit Generator Armature for \$5.00.



We overhaul any Ford Generator or Starting Motor for \$3.00 plus parts.

We rewind any Ford Armature for \$3.00.

We repair Ford Cutouts for \$0.65.

Only genuine Ford parts used. All Ford work shipped the same day it is received. Our work is all done by factory trained mechanics and our plant complete in every detail. All work guaranteed. **ONLY GENUINE PARTS USED**

A trial will convince you that our service will save you many dollars.

U. S. Auto Supply Company

3845-49 So. Wabash Ave., Chicago, Ill.

BAY CITY CAPSTANS AND WINCHES

Bay City "F" Capstans

for Motor Trucks

Bay City "D" Winch

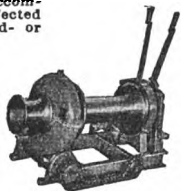
If you want a special attachment on your truck for accomplishing your particular task, write us. One of our perfected designs of capstans, horizontal drum winches, or hand- or power-operated cranes may solve the problem.



For general truck duty.
See circular 308.

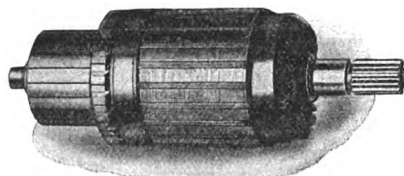
AGENTS

L. V. Hopkins.....111 So. Detroit St., Tulsa, Okla.
C. W. Whitney Co., 439 California St., San Francisco, Cal.
Bay City Winch Sales Co., 3370 Gratiot Ave., Detroit, Mich.
Simpler Commercial Body Co.....
.....1175 Jefferson Ave., Buffalo, N. Y.
Motive Parts Corp.....140 W. 55th St., New York City
Hill Northwestern Sales Co.....
.....Pellam & Anthony Aves., St. Paul, Minn.
Auto Truck Steel Body Co., 3034 Carroll Ave., Chicago, Ill.
Rogers-Schmitt Wire & Iron Co.....
.....2305 Malden Lane, St. Louis, Mo.
A. Lange Mfg. Co.....3224 Vliet St., Milwaukee, Wis.



Especially adapted to telephone and heavy loading work. See circular 311.

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THIS ARMATURE and twenty-six other kinds manufactured by us and in stock for immediate delivery.

With these armature manufacturing facilities, we rewind all kinds of generator and starter armatures in a SUPERIOR manner.

Three thousand rewound armatures in stock to ship you on receipt of your old armature. **GENERATORS AND STARTING MOTORS REPAIRED. Write for Price List.**

ARMATURE REWINDING COMPANY, 3537 Bell Ave., ST. LOUIS, MO.

Armature Rewinding and Electrical Repair Service

Armature Rewind Price List

Ford Liberty Generator Armatures.....\$ 2.50
Ford Liberty Starter Armatures..... 4.00
All Other Makes Generator Armatures..... 5.00
All Other Makes Starter Armatures..... 8.00
Single Unit Motor-Generator Armatures.. 12.00

Factory Wire Size Guaranteed

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Ford Liberty Generator or Starter.....\$2.50
All Other Makes Generator or Starter.... 5.00
Single Unit Motor-Generator..... 7.50
All Magnetos 3.50

Ford Circuit Breakers Rebuilt 50c

CONTINENTAL ARMATURE WORKS

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CHICAGO, ILL.

Please mention The Automobile Trade Directory

WINDOWS, Glass Curtain (Continued)

Western Brass Mfg. Works, Marshall Blvd. & 21st St., Chicago, Ill. (See page 471.)

Wildenberg Bros., 356 W. 50th St., New York, N. Y. "W. B."

Winter Stamping Co., Goshen, Ind.
Wisconsin Top Co., Racine, Wis. "Badger." (See page 299.)

WING NUTS—See Nuts, Thumb

WING SCREWS—See Screws, Thumb

WINGS, GLASS WINDSHIELD — See Shields, Auxiliary Wind

WIPERS and POLISHING CLOTHS

(For Cotton Waste—See Waste, Cotton)

Acme Mills Co., 1237 Beaubien St., Detroit, Mich

American Manufacturers Supply Co., 1401-15 Orleans St., Detroit, Mich.

American Mill Ends Co., 1934 Gratiot Ave., Detroit, Mich

Auto-Kleaner—See Capital Knitting Co.

Basco—See Baylis Sanitary Supply Co.

Baylis Sanitary Supply Co., 341 W. Superior St., Chicago, Ill. "Basco."

Blakeley & Son., John, 1039 Germantown Ave., Philadelphia, Pa.

Blank, Irving, 291 Broadway, New York, N. Y.

Cadillac Paper Co., 191 E. Hancock Ave., Detroit, Mich.

Capital Knitting Co., Cohoes, N. Y. "Auto-Kleaner."

Chicago Sanitary Rag Co., 3137-43 E. Loomis St., Chicago, Ill.

Columbus Washed & Sterilized Wiper Co., 86 W. Maple St., Columbus, O.

Consumers Paper Co., 555 Beaufait Ave., Detroit, Mich. "Worthmore."

Corner, Edward, 1039 Beach St., Philadelphia, Pa.

Detroit Mill Ends Co., 562 Gratiot Ave., Detroit, Mich.

Fidelity—See Hagy Waste Works.

Fulton Rag & Cotton Mills, 330 Wythe Ave., Brooklyn, N. Y.

Gross & Co., E., 90-96 Avon St., Hartford, Conn.

Hagy Waste Works, J. Milton, 336 S. Swanson St., Philadelphia, Pa. "Fidelity."

Hagy & Son, Clayton L., 16th & Carpenter Sts., Philadelphia, Pa.

Hoffman-Corr Mfg. Co., 313 Lafayette St., New York, N. Y.

Imperial—See Rath Mfg. Co.

Klein Waste Products Corp., 73-75 Church St., Albany, N. Y.

Leshner Paper Stock Co., 501 Fifth Ave., New York, N. Y.

Lyman Co., John R., 119 Liberty St., Springfield, Mass.

Masco—See Massasoit Mfg. Co.

Massasoit Mfg. Co., 134 Pocasset St., Fall River, Mass. "Masco."

Mill Remnants Co., 19 Bond St., New York, N. Y. "Miraco."

Miraco—See Mill Remnants Co.

North & Son, Jos. W., Sixth St., Elizabeth, N. J.

Northwestern Sanitary Wiping Rag Co., 1015 Helden St., Chicago, Ill.

Oil & Waste Saving Machine Co., Real Estate Trust Bldg., Philadelphia, Pa.

Peerless Sanitary Wiping Materials Co., 367-73 Fulton St., Brooklyn, N. Y.

Quality—See Sanitary Wiping Cloth Co.

Rath Mfg. Co., Hedley & Richmond Sts., Philadelphia, Pa. "Imperial."

Regal Polishing Cloth Co., 2268-98 S. Lumber St., Chicago, Ill.

Royal Mfg. Co., Rahway, N. J. (See page 939.)

Sani-Mist Co., 16 Home St., New London, Conn.

Sanitary Rag Co., Kalamazoo, Mich.

Sanitary Wiping Cloth Co., 2261 S. Union Ave., Chicago, Ill. "Quality."

Scheinman & Co., I. L., 974 Sherman St., Detroit, Mich.

Standard Waste Mfg. Co., 2306-10 N. American St., Philadelphia, Pa.

Standard Waste & Bag Co., 234 W. 27th St., New York, N. Y.

Stevenson Bro. & Co., 110 Race St., Philadelphia, Pa.

Trunsky & Co., Peter, 1001 Adelaide St., Detroit, Mich.

Worthmore—See Consumers Paper Co.

WIRE BELTS—See Belts, Spiral Wire

WIRE BROOMS—See Brooms, Steel Wire

WIRE BRUSHES—See Brushes, Wire Buffing

WIRE BUFFING BRUSHES—See Brushes, Wire Buffing

WIRE CABLE—See Rope

WIRE CLOTH—See Cloth, Wire

WIRE DEMOUNTABLE WHEELS—See Wheels, Demountable Wire

WIRE FERRULES, AIRPLANE—See Thimbles and Ferrules, Airplane Wire

WIRE, FLEXIBLE CONTROL—See Cable, Flexible Control

WIRE GAGES—See Gages, Drill and Wire

WIRE, Insulated

(Including ignition wires and cables, starter cables and wire for lighting circuits)

American Brass Co., Waterbury, Conn. (See page 161.)

American Electrical Works, Philadelphia, R. I.

American Steel & Wire Co., 208 E. La Salle St., Chicago, Ill.

B. I. W.—See Boston Insulated Wire & Cable Co.

Belden Mfg. Co., 2300 S. Western Ave., Chicago, Ill. "Beldenmold." (See page 187.)

Beldenmold—See Belden Mfg. Co.

Bishop Gutta-Percha Co., 420 E. 25th St., New York, N. Y.

Boston Insulated Wire & Cable Co., Boston, Mass. "B. I. W." (See page 937.)

Bourn Rubber Co., 53 Warren St., Providence, R. I. "Star."

Crescent Insulated Wire & Cable Co., Older Ave & Taylor St., Trenton, N. J.

Ecco—See Habirshaw Electric Cable Co.

General Electric Co., Schenectady, N. Y. (See page 697.)

Goodrich Co., B. F., 8 Main St., Akron, O.

Everything is listed under the NOUN or principal word

Ignition Cable**Starting Cable****Lighting Cable***Our cables are used on many of the leading makes of Automobiles***BOSTON INSULATED WIRE & CABLE CO.**

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**Boston Insulated Wire
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ROME WIRE

Magnet Wire: Round,
 square and rectangular;
 cotton covered, silk covered,
 enamel covered;
 enamel and cotton or
 silk covered.

Automobile Wires:
 Charging Cables, Ignition
 Wires, Starter
 Cable, Lighting Cable,
 Horn Wire, Gas Engine
 Cable.

Rome Wire Co. Rome NY
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*Rome merit wins customers
 Rome service holds them*

**WIRE = ROME****KERITE**

A product of over fifty years'
 distinguished service in the
 most important electrical
 fields possessing inherent
 characteristics which make
 it preeminently desirable for
 high tension automotive ignition.



KERITE INSULATED WIRE & CABLE COMPANY
 NEW YORK CHICAGO

MANUFACTURERS OF ALL KINDS

INSULATED WIRES

INCLUDING

**WIRING HARNESES, HIGH AND LOW TENSION CABLES,
 LIGHTING AND HORN WIRES FOR THE AUTOMOTIVE TRADE**

**The Whitney Blake Company**

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NEW HAVEN, CONN.

NEW YORK OFFICE
105 EAST 131st STREET

Western Electric Company

INCORPORATED
 SOLE DISTRIBUTORS

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WIRE, Insulated (Continued)

Goodrich-Lenhart Mfg. Co., Hamburg, Pa.
 "MP." (See page 933.)
 Habrshaw Electric Cable Co., Yonkers, N. Y.
 "Ecco."
 Hazard Mfg. Co., 81 E. Ross St., Wilkes-Barre, Pa.
 Indiana Rubber & Insulated Wire Co., Jonesboro, Ind. "Paranite."
 Kerite Insulated Wire & Cable Co., New York, N. Y. (See page 957.)
 McCarthy Bros. & Wilson, 2241 N. Broad St., Philadelphia, Pa. (Dealers.)
 (See page 716.)
 MP—See Goodrich-Lenhart Mfg. Co.
 National India Rubber Co., Bristol, R. I.
 New York Insulated Wire Co., 114 Liberty St., New York, N. Y.
 Okonite Co., Passaic, N. J.
 Packard Electric Co., Warren, O.
 Paranite—See Indiana Rubber & Insulated Wire Co.
 Rex Ignition Mfg. Co., 250 W. 54th St., New York, N. Y. (See page 655.)
 Roebing's Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.
 Rome Wire Co., Rome, N. Y.
 (See page 957.)
 Safety Insulated Wire & Cable Co., 114 Liberty St., New York, N. Y.
 Simplex Wire & Cable Co., 301 Devonshire St., Boston, Mass.
 Standard Underground Cable Co., Westinghouse Bldg., Pittsburgh, Pa.
 Star—See Kourn Rubber Co.
 White, J. M., 1116-22 Olive St., Philadelphia, Pa. (See page 751.)
 Whitney Blake Co., New Haven, Conn.
 (See page 957.)

WIRE, Phosphor Bronze

American Brass Co., Waterbury, Conn.
 (See page 101.)
 Omega—See Riverside Metal Co.
 Phosphor Bronze Smelting Co., 2200 Washington Ave., Philadelphia, Pa.
 (See page 583.)
 Riverside Metal Co., Riverside, N. J. "Omega."

WIRE ROPE—See Rope, Wire

WIRE ROPE CLAMPS—See Clamps, Wire Rope

WIRE SOLDER—See Solder, Bar and Wire

WIRE SPOKES—See Spokes, Wire

WIRE SPRING—See Wire, Steel Spring

WIRE, Steel Spring

American Steel & Wire Co., 208 S. La Salle St., Chicago, Ill.
 Blancke Co., L. C., 10-12 Thomas St., New York, N. Y. (Sole Distributors for Blancke Steel Co., Taunton, Mass.)
 Blancke Steel Co.—See Blancke Co.
 Helmuth Co., L., 17 Battery Pl., New York, N. Y. (Importers.)
 Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago, Ill. (See page 821.)
 Roebing's Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.
 Trenton Iron Co., Trenton, N. J.
 Wickwire-Spencer Steel Corp., Worcester, Mass. (See page 794.)

WIRE TERMINAL FORMING TOOLS—See Tools, Wire Terminal Forming

WIRE TERMINALS—See Terminals, Wire

WIRE TIMER GUARDS FOR FORDS—See Guards, Timer Wire

WIRE WHEELS, NON-DEMOUNTABLE—See Wheels, Non-Demountable Wire

WIRING ASSEMBLIES FOR FORDS—See Sets, Wiring

WIRING CHARTS, ELECTRIC—See Charts, Electric Wiring

WIRING CLEATS—See Cleats, Fibre Wiring

WIRING CONDUIT—See Conduit, Flexible Car Wiring

WIRING HARNESS FOR FORDS—See Sets, Wiring

WIRING, IGNITION, FOR FORDS—See Sets, Wiring

WIRING MACHINES—See Machines, Fender Wiring

WIRING MANIFOLDS—See Manifolds, Wiring

WIRING SETS FOR FORDS—See Sets, Wiring

WIRING TUBES—See Tubes, Wiring

WOOD BATTERY BOXES—See Boxes, Wood Battery

WOOD BENDINGS—See Bendings, Wood

WOOD BODIES—See Bodies, Wood

WOOD BORING MACHINES—See Machines, Wood Boring

WOOD DASHES—See Dashes, Wood

WOOD DISC WHEELS—See Wheels, Wood Disc

WOOD MUD GUARDS—See Fenders or Mud Guards, Wood

WOOD PANELS—See Panels, Wood

WOOD PARTS—See Parts, Wood

WOOD PLANERS—See Planers, Wood

WOOD SCREWS—See Screws, Wood

WOOD SHAPERS—See Shapers, Wood

WOOD TRUCK CABS—See Cabs, Wood Truck

WOOD WHEEL MANUFACTURERS ASSOCIATION—See Associations and Societies

WOOD WHEEL TIGHTENING COMPOUNDS—See Compounds, Wood Wheel Tightening

WOOD WHEELS—See Wheels, Wood

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TIFFIN, OHIO, U. S. A.

Selling Agents:

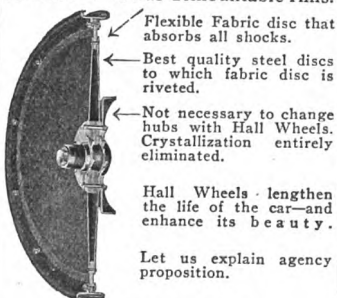
L. BEST CO., 75 BARCLAY ST., NEW YORK,
N. Y.

Chicago Houses:

30-32 N. CLINTON ST., CHICAGO, ILL.

HALL FLEXIBLE STEEL DISC WHEELS

Think of a wheel that actually absorbs shocks, that protects the chassis from destructive vibration! That is what the Hall Wheel does. In addition it is handsome, strong, rustless—and has demountable rims.



Flexible Fabric disc that absorbs all shocks.

Best quality steel discs to which fabric disc is riveted.

Not necessary to change hubs with Hall Wheels. Crystallization entirely eliminated.

Hall Wheels lengthen the life of the car—and enhance its beauty.

Let us explain agency proposition.

Hall Syndicate, Inc.
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THERE IS A HARVEY WHEEL FOR YOUR CAR

It is the BEST wheel whether disc, wire or wood is considered. Prices are reasonable.

Let us quote you.

Harvey Rim & Wheel Co.
25 Jewett Avenue, Buffalo, N.Y.

MARTIN TRAILERS and TRAILER PARTS

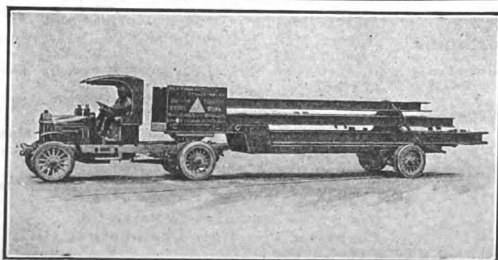
1 to 20 Tons Capacity

There are no better trailers made than Martin Trailers. They are scientifically designed and made of the best material it is possible to obtain.

Write for our 72-page catalog fully describing our entire line.

MARTIN ROCKING FIFTH WHEEL CO.
Springfield Massachusetts

Manufacturers of
Rocking Fifth Wheels, Floating Bearing Axles, Rear-End Assemblies, Castor Jacks, Two-Wheel Trailers, Four-Wheel Trailers and Semi-Trailers.



18 Ton Structural Steel Trailer, Using Martin 36" Fifth Wheel and No. 6 Rear-End Assembly

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WOOL, Steel

American Steel Wool Mfg. Co., 9-13 Desbrosses St., New York, N. Y. "Ideal."
 Buehne Steel Wool Co., 93 Nassau St., New York, N. Y.
 Ideal—See American Steel Wool Mfg. Co.
 Rhodes & Co., James H., 513 W. Austin Ave., Chicago, Ill.

WORM DRIVE REAR AXLES—See Axles, Worm Drive Rear

WOVEN BELTS—See Belts

WRAPPING MACHINES—See Machines, Tire Bandage Wrapping

WRECKING CASTORS—See Trucks, Castors and Spare Wheels, Wrecking

WRECKING SPARE WHEELS—See Trucks, Castors and Spare Wheels, Wrecking

WRECKING TRUCKS—See Trucks, Castors and Spare Wheels, Wrecking

WRENCH BOXES—See Boxes, Wrench and Small Tool

WRENCHES, ADJUSTABLE — See Wrenches, Nut and Bolt

WRENCHES, ALLIGATOR—See Wrenches, Nut

WRENCHES, BOLT—See Wrenches, Nut

WRENCHES, DROP FORGED—See Wrenches, Nut

WRENCHES, Grease Cup

Bonney Forge & Tool Wks., Allentown, Pa.
 Stepanian Mfg Co., Columbus, O.

WRENCHES, Hub Cap, for Fords

Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. (See page 523.)
 Mossberg Co., Frank, Attleboro, Mass.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Oakes Co., Indianapolis, Ind. (See page 369.)

WRENCHES, Magneto & Distributor

Special Hardware Corp., 181 S. Portland Ave., Brooklyn, N. Y. (See page 961.)

WRENCHES, MONKEY—See Wrenches, Nut and Bolt

WRENCHES, Nut and Bolt

Alderman—See Mossberg Co.
 Allan & Co., A. C., Morris, Ill.
 Allan-Differbaugh Wrench & Tool Co., Baraboo, Wis. "Kant-Slip."
 Allen Mfg. Co., 135 Sheldon St., Hartford, Conn.

Allen Wrench & Tool Co., 756 Eddy St., Providence, R. I.

American Grinder Mfg. Co.—See Jonas, C. N. & F. W.

American Pulley Co., 4300 Wissahickon Ave., Philadelphia, Pa.

American Valve Tool Mfg. Co., 354 W. 50th St., New York, N. Y.

Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill. "Sixset."

Armstrong Bros. Tool Co., 304 N. Francisco Ave., Chicago, Ill. (See page 888.)

Arrow Tool Co., 778 Kensington Ave., Buffalo, N. Y.

Art Metal Works, Aronson Sq., Newark, N. J. "Ronson." (See page 607.)

Atco Wrench Co., 127 E. Spring St., Lima, O.

Athol Machine Co., Athol, Mass.

Auto Cle—See Mossberg Co.

Auto Queen—See C. M. B. Wrench Co.

B. & C.—See Bethis & Call Hardware & Tool Co.

Barcalo Mfg. Co., 225 Louisiana St., Buffalo, N. Y. "King Dick."

Bay State Autokit—See Bay State Pump Co.

Bay State Pump Co., 564 E. First St. (So. Boston), Boston, Mass. "Bay State Autokit."

Becco—See Michigan Motor Specialties Co.

Bemis & Call Hardware & Tool Co., 863 Main St., Springfield, Mass. "B. & C."

Bergman Tool Mfg. Co., 1573-75 Niagara St., Buffalo, N. Y. "Queen City."

Bersted Mfg. Co., 765 Mather St., Chicago, Ill.

Bet-R-Bilt—See Burton-Rogers Co.

Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.

Billmont—See Guthard Co.

Blackhawk—See Jonas, C. N. & F. W.

Bonney Forge & Tool Works, Allentown, Pa.

Bornstein & Co., Ipswich, Mass.

Braunsdorf-Mueller Co., 265 Madison St., Elizabeth, N. J.

Buckeye—See Central Brass & Fixture Co.

Buffum Tool Co., Louisiana, Mo.

(See page 888.)

Burton-Rogers Co., 755 Boylston St., Boston, Mass. Sales Department for Robinson

Equipment Co., Mattapan, Mass. "Bet-R-Bilt."

C. M. B. Wrench Co., Garwood, N. J. "Silver King." "Auto Queen."

C. M. & D.—See Chicago Mfg. & Distributing Co.

Caldwell Tool Mfg. Co., 87 Warren St., New York, N. Y.

Carll—See Robinson Co.

Carleton Co., 170 Summer St., Boston, Mass.

Central Brass & Fixture Co., Segler & Hughes Sts., Springfield, O. "Buckeye."

Champion—See Syracuse Wrench Co.

Cheney Hammer Corp., H., Little Falls, N. Y.

Chicago Mfg. & Distributing Co., 411 S. Sangamon St., Chicago, Ill. "C. M. & D."

Christensen Mfg. Co., 1024 Seymour Ave., Utica, N. Y. (See page 963.)

Code Mfg. Co., 1329 W. Lake St., Chicago, Ill.

Coes Wrench Co., Coes Sq., Worcester, Mass.

Crescent Mfg. Co., 129 Reade St., New York, N. Y. (See page 673.)

Crescent Tool Co., 204 Harrison St., Jamestown, N. Y.

Crocodile—See Lakeside Forge Co.

Cushman Co., Inc., Champaign, Ill. (See page 887.)

Diamond—See Mossberg Co.

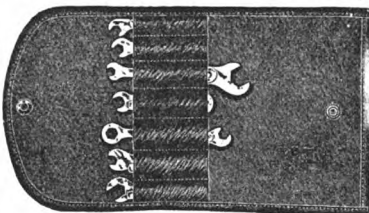
E. E.—See Edelmann & Co.

Easyway—See Lawrence Mfg. Co.

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"BIG SEVEN" MAGNETO- WRENCHES
DISTRIBUTOR

fit 13 popular systems—over 200 cars, trucks, motorcycles, motorboats, etc.



5 inches by 9 inches

This kit retails at a popular price

Good margin both for dealer and jobber.

Wrenches F-I-T, are case-hardened right, and are stamped with name of system—(clerks as well as customers like this feature).

We also supply Individual Wrenches; also Larger Kits.

Samples and literature on request.

SPECIAL HARDWARE CORP.

181 S. PORTLAND AV., BKLYN, N. Y.

**"GETS" ANY NUT—
—ANY PLACE**

Dealers: Any nut, any place—even in the ordinarily most inaccessible parts of a car—can be reached with ease with this handy little tool. The great usefulness, low cost and compactness of this set make it popular with motorists everywhere.

Dealers: Our discounts to the trade are liberal. We want more dealers all over the country to stock Fitzall Socket Wrench Sets. Dealers now carrying these sets find that their many useful features make them ready sellers everywhere. A post-card will bring you full information. Write us today.



**The Little 2 by 2 by 8 Set
Complete Can Be Put
Anywhere**

The Fitzall Socket Wrench Set as shown above consists of 6 sockets of different sizes, a handle, an extension and a neat leatherette carrying case. These sockets are carefully machined from solid steel bars and guaranteed against breaking. Being made in standard sizes, they will fit a surprisingly large number of nuts on every make of car. A spring and ball are used to hold sockets on handle and extension, but since both spring and ball are hardened, there will always be tension. This set makes the carrying of many different wrenches unnecessary. On the inside of each package of Fitzall Socket Wrench Sets you will find a printed guarantee which has the full and absolute backing of this company.

Fitzall Wrench Co.

9353 St. Paul Avenue

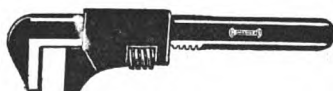
Detroit, Michigan

**An Important Message
To All Who Use
or Sell Wrenches**

This is a message to everyone in the automotive trade, who either sells wrenches or has occasion to use them in their daily work.

A short time ago one of the largest manufacturing companies in the world was in the market for drop forge wrenches—quality and price was to determine the line of wrenches they would purchase.

The test was a severe one. Nuts were threaded on the bolts and were set up until either the bolt or the wrench was broken.



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WRENCHES, Nut and Bolt (Continued)

- Edelmann & Co., E., 2638 N. Crawford Ave., Chicago, Ill. "Han-D," "E. E.," "Sextet." (See page 523.)
- Edstrom Machinery Co., Cary, Ill. (See page 733.)
- Efficiency Device Corp., 198 Eighth St., Long Island City, N. Y.
- Efficient Vise & Wrench Co., 4207 Clark Ave., Cleveland, O.
- Erie Tool Works, 11th & French Sts., Erie, Pa.
- Ever-Ready—See Lakeside Forge Co.
- Fairmount Tool & Forging Co., 10611 Quincy Ave., Cleveland, O.
- Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawaco." (See page 429.)
- Fawco—See Faw Co.
- Fenton Machine Tool & Die Co., Inc., Fenton, Mich. (See page 327.)
- Fitzall Wrench Co., 9353 St. Paul Ave., Detroit, Mich. (See page 961.)
- 5 in 1—See Rosel Co.
- Gogle Hand-Forged Tool Co., 1941 Polk St., San Francisco, Cal.
- Goodell-Pratt Co., Greenfield, Mass.
- Gordon Wrench Corp., Woolworth Bldg., New York, N. Y.
- Gray-Hofman Co., 542-48 North Parkside Ave., Chicago, Ill. (See page 265.)
- Gripsall—See Mossberg Co.
- Guernsey, C. C., Derry, N. H.
- Guthard Co., Edgar C., 361 E. Ohio St., Chicago, Ill. "Billmont."
- Han-D—See Edelmann & Co.
- Handy—See Lakeside Forge Co.
- Harris & Reed Mfg. Co., 1510-22 W. 15th St., Chicago, Ill.
- Hawkeye—See Lakeside Forge Co.
- Helwig Mfg. Co., Seventh & Locust Sts., St. Paul, Minn.
- Herbrand Co., 109-25 E. State St., Fremont, O.
- Hergi Mfg. Co., Bridgeport, Conn.
- Hexall—See Sedgley, R. F.
- Hill Pump Valve Co.—See Zinke Co.
- Hjorth & Co., Wm., 28 Taylor St., Jamestown, N. Y.
- Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for "King Dick" Wrenches.) (See page 179.)
- Humboldt—See Republic Auto Parts Co.
- Hy-Speed Wrench Co., 2620 W. 48th St., Chicago, Ill. "Quicklamp."
- Imperial Tool & Mfg. Co., 35 S. Desplaines St., Chicago, Ill. (Distributors.) (See page 503.)
- Johnson Mfg. Co., 1011 S. 12th St., Omaha, Nebr.
- Jonas, C. N. & F. W., 608 S. Dearborn St., Chicago, Ill. (Sales Representatives for American Grinder Mfg. Co., Milwaukee, Wis. "Blackhawk.") (See page 134.)
- Kant Slip—See Allan-Diffenbaugh Wrench & Tool Co.
- Ketler-Elliott Co., 3153 S. California Ave., Chicago, Ill.
- Keystone Mfg. Co., 41 Chandler St., Buffalo, N. Y. "Westcott."
- Kilborn & Bishop Co., Chapel & Lloyd Sts., New Haven, Conn. "Saxon."
- King Dick—See Barcalo Mfg. Co.
- King Pressed Steel & Mfg. Co., Boston, Mass.
- Kokomo Wrench Co., Kokomo, Ind.
- Krauter & Co., Newark, N. J. (See page 643.)
- L & L Mfg. Co., 134 High St., Newark, N. J.
- Lakeside Forge Co., Erie, Pa. "Crescendille," "Ever-Ready," "Handy," "Hawkeye." (See page 961.)
- Lamson & Sessions Co., 2188 Scranton Rd., Cleveland, O.
- Lane Unique Tool Co., Will B., 170 W. Randolph St., Chicago, Ill. "Unique."
- Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill.
- Larson Tool & Stamping Co., Olive St., Attleboro, Mass.
- Lawrence Mfg. Co., F. K., 20 E. Lake St., Chicago, Ill. "Easyway." (See page 963.)
- Lowell Wrench Co., 54 Commercial St., Worcester, Mass.
- Lutz Co., Morris, Bambrey & Moore Sts., Philadelphia, Pa.
- McKalg Drop Forge Co., 14 Perry St., Buffalo, N. Y.
- Masco—See Mayer Auto Accessories Corp.
- Mayer Auto Accessories Corp., 333 Washington St., Buffalo, N. Y. "Masco."
- Mayhew Steel Products, 291 Broadway, New York, N. Y.
- Michigan Motor Specialties Co., 120 Mt. Elliott Ave., Detroit, Mich. "Becco."
- Miller Tool & Mfg. Co., 1725 16th St., Detroit, Mich.
- Miller Wrench Co., 1054-56 S. Clinton St., Syracuse, N. Y.
- Mossberg Co., Frank, Attleboro, Mass. "Sterling," "Diamond," "Alderman," "National," "Auto Cle," "Gripsal."
- National—See Mossberg Co.
- Necedah Mfg. Co.—See Jonas, C. N. & F. W.
- New England Forge Co., 9 Plymouth St., Worcester, Mass.
- New England Pressed Steel Co., Washington Ave., Natick, Mass.
- Niagara Metal Stamping Corp., 235-47 Tenth St., Niagara Falls, N. Y. "Premax."
- Packer Auto Specialty Co., 1420 S. Michigan Ave., Chicago, Ill. "Ray."
- Peck, Stow & Wilcox Co., Southington, Conn. "Pexto."
- Peerless Wrench Co., 98 Sprague St., Providence, R. I.
- Perfect Handle—See Smith & Co.
- Pexto—See Peck, Stow & Wilcox Co.
- Pick-Up—See New Britain Mfg. Co.
- Premax—See Niagara Metal Stamping Corp.
- Quaker Tool Co., 120 W. Venango St., Philadelphia, Pa.
- Queen City—See Bergman Tool Mfg. Co.
- Quicklamp—See Hy-Speed Wrench Co.
- Ray—See Packer Auto Specialty Co.
- Red Chief Mfg. Co., Louisville, Ky. "L. G."
- Red Devil—See Smith & Hemenway.
- Republic Auto Parts Co., 51-55 Tenth St., Long Island City, N. Y. "Humboldt," "Sterling."
- Robinson Co., M. W., 296 Broadway, New York, N. Y. "Carli."
- Robinson Equipment Co.—See Burton-Rogers Co.
- Ronson—See Art Metal Works.
- Rosel Co., Wm. E., 858 S. 17th St., Columbus, O. "5 in 1."
- S. & I. Co., 55-57 Governor St., Springfield, Mass.
- Saxon—See Kilborn & Bishop Co.
- Scholler Mfg. Co., 147 Leslie St., Buffalo, N. Y.
- Sedgley, R. F., 2311-13 N. 16th St., Philadelphia, Pa. "Hexall."
- Sextet—See Edelmann & Co.
- Shaw Propeller Co., 574 Cambridge St., Allston, Mass.
- Silver King—See C. M. B. Wrench Co.
- Sixset—See Armand Machine Works.
- Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."

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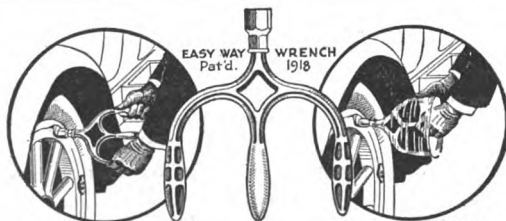
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 Snap-On Wrench Co., 30th Ave. & S. Pierce St., Milwaukee, Wis.
 Stadco—See Stader Metal Specialty Co.
 Stader Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."
 Standard Tool Co., 6900-34 Central Ave., Cleveland, O.
 Star Mfg. Co., Carpentersville, Ill.
 Starrett Co., L. S., Athol, Mass.
 Sterling—See Mossberg Co.
 Sterling—See Republic Auto Parts Co.
 Superior—See Williams & Co.
 Syracuse Wrench Co., 501 E. Water St., Syracuse, N. Y. "Champion."
 Thomson Drop Forge Co., W. Main St., Plantville, Conn.
 Trimo—See Trimont Mfg. Co.
 Trimont Mfg. Co., 55 Amory St., Roxbury, Mass. "Trimo."
 Unique—See Lane Unique Tool Co.
 Universal Wrench Co., 3067 E. Grand Blvd., Detroit, Mich.
 Utility—See Zinke Co.
 Victor Mfg. Co., St. Paul & Hoffman Sts., Dayton, O. "Vimco."
 Vimco—See Victor Mfg. Co.
 Vulcan Engineering Co., Wildwood Ave., Jackson, Mich.
 Vichek Tool Co., 3000 E. 87th St., Cleveland, O.
 Wakefield, C. E., 89 Exchange St., Worcester, Mass. "Wizard."
 Walden-Worcester, Inc., Worcester, Mass. (See page 901.)
 Westcott—See Keystone Mfg. Co.
 Whitaker Mfg. Co., Chicago, Ill. (See page 311.)
 Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. "Superior." (See page 963.)
 Wizard—See Wakefield, C. E.
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 771.)

WRENCHES, Oil Cock, for Fords

(For opening or closing crank case drain cock or oil test cock without getting under car)

American Automatic Devices Co., 515 W. Monroe St., Chicago, Ill. "Original." (See page 251.)
 Auto Metal Parts Co., 624 E. Locust St., Des Moines, Ia. (See page 775.)
 Bayne Mfg. Co., Bushnell, Ill. (See page 149.)
 Brooksmith Mfg. Co., 1856-60 Menard St., St. Louis, Mo.
 Dow Co., Louisville, Ky. (See page 157.)
 Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawco." (See page 429.)
 Fawco—See Faw Co.
 Gahm-McCormick Co., 806 E. Main St., Streator, Ill. (See page 171.)
 Handy Products Co., Erie Bldg., Cleveland, O.
 Kees Mfg. Co., F. D., 24 High St., Beatrice, Neb.
 Mac-Dan Co., 2414 Indianola Ave., Columbus, O.
 Mazura Mfg. Co., 412-14 S. Sixth St., St. Louis, Mo.

Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 Original—See American Automatic Devices Co.

Stadco—See Stader Metal Specialty Co.
 Stader Metal Specialty Co., 310 S. Canal St., Chicago, Ill. "Stadco."
 W-A—See Whetstone & Co.
 Whetstone & Co., John H., Court St., Lapeer, Mich. "W-A."

WRENCHES, OPEN END—See Wrenches, Nut

WRENCHES, Pipe

Armstrong Mfg. Co., 335 Knowlton St., Bridgeport, Conn.
 Bonney Forge & Tool Works, Allentown, Pa. "Vixen."
 Cochran—See Larco Wrench & Mfg. Corp.
 Como—See Mechanical Specialties Co.
 Edstrom Machinery Co., Cary, Ill. (See page 733.)
 Efficient Vise & Wrench Co., 4207 Clark Ave., Cleveland, O.
 Erie Tool Works, 11th & French Sts., Erie, Pa.
 Greenfield Tap & Die Corp., Greenfield, Mass. (See page 855.)
 Hjorth & Co., Wm., 23 Taylor St., Jamestown, N. Y.
 Ideal—See Kroeschell Bros. Co.
 Keystone Mfg. Co., 41 Chandler St., Buffalo, N. Y. "Westcott."
 Kroeschell Bros. Co., 444 W. Erie St., Chicago, Ill. "Ideal."
 Larco Wrench & Mfg. Corp., 7800 Woodlawn Ave., Chicago, Ill. "Cochran."
 Leader—See Ripley Pipe Wrench Co.
 Lutz-Webster Engineering Co., 31st St. & Grays Ferry Rd., Philadelphia, Pa.
 Mechanical Specialties Co., 123 S. Michigan Ave., Chicago, Ill. "Como."
 Moore Drop Forging Co., 336 Birnie Ave., Springfield, Mass.
 Oswego Tool Co., 119-27 W. First St., Oswego, N. Y.
 Perfect Handle—See Smith & Co.
 Ripley Pipe Wrench Co., Ripley, N. Y. "Leader."
 Roebling's Sons Co., John A., S. Broad & Canal Sts., Trenton, N. J.
 Shaw Propeller Co., 574 Cambridge St., Allentown, Mass.
 Smith & Co., H. D., Plantsville, Conn. "Perfect Handle."
 Stillson—See Walworth Mfg. Co.
 Trimo—See Trimont Mfg. Co.
 Trimont Mfg. Co., 55 Amory St., Roxbury, Mass. "Trimo."
 Vixen—See Bonney Forge & Tool Works.
 Vulcan—See Williams & Co.
 Wakefield, C. E., 89 Exchange St., Worcester, Mass.
 Walworth Mfg. Co., 998 First St., Boston, Mass. "Stillson."
 Westcott—See Keystone Mfg. Co.
 Whitaker Mfg. Co., Chicago, Ill. (See page 311.)
 Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. "Vulcan." (See page 963.)

WRENCHES, REAMER—See Wrenches, Nut

WRENCHES, SOCKET—See Wrenches, Nut

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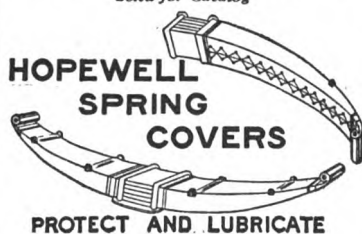
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WRENCHES, SOLID—See Wrenches, Nut

WRENCHES, SPARK PLUG—See Wrenches, Nut

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All-In-One Wrench Co., 122 S. Michigan Ave., Chicago, Ill.
 Allen Wrench & Tool Co., 756 Eddy St., Providence, R. I. "Eureka."
 Armand Machine Works, 3670 Milwaukee Ave., Chicago, Ill.
 Au-To Compressor Co., 308 S. Mulberry St., Wilmington, O.
 Auto Mechanics Tool Co., 2501 S. Washington St., Peoria, Ill. "Peoria."
 B. A. T. Co., Germantown & Stenton Aves., Philadelphia, Pa. "Panther."
 Badger Mfg. Corp., Milwaukee, Wis. (See page 171.)
 Bay State Autokit—See Bay State Pump Co.
 Bay State Pump Co., 564 E. First St. (S. Boston), Boston, Mass. "Bay State Autokit."
 Bet-R-Bilt—See Burton-Rogers Co.
 Billings & Spencer Co., Laurel & Park Sts., Hartford, Conn.
 Billmont—See Guthard Co.
 Burton-Rogers Co., 755 Boylston St., Boston, Mass. (Sales Department for Robinson Equipment Co., Mattapan, Mass. "Bet-R-Bilt.")
 Christensen Mfg. Co., 1024 Seymour Ave., Utica, N. Y. (See page 963.)
 Danielson Tool Co., Fulton St., Wausau, Wis.
 Dixie—See Southern Machine & Tool Co.
 E-Z—See Reschke Machine Works Co.
 Eureka—See Allen Wrench & Tool Co.
 Faw Co., J. H., 27 Warren St., New York, N. Y. "Fawco." (See page 429.)
 Fawco—See Faw Co.
 Graham Roller Bearing Corp., Connersport, Pa. (See page 110.)
 Guthard Co., Edgar C., 361 E. Ohio St., Chicago, Ill. "Billmont."
 Harris & Reed Mfg. Co., 1510-22 W. 15th St., Chicago, Ill.
 Hexall—See Sedgley, R. F.
 Hill Pump Valve Co.—See Zinke Co.
 Holmes, George L., 1776 Broadway, New York, N. Y. (Eastern Distributors for Graham Wrenches.) (See page 179.)
 Improved Gauge Mfg. Co., 105 Canal St., Syracuse, N. Y. (See page 405.)

Ketler-Elliott Co., 3153 S. California Ave., Chicago, Ill.
 King Pressed Steel & Mfg. Co., Boston, Mass.
 Lane Unique Tool Co., Will B., 170 W. Randolph St., Chicago, Ill. "Unique."
 Miller Wrench Co., 1054-56 S. Clinton St., Syracuse, N. Y.
 Mitchell Wrench Co., 1828 N. 17th St., St. Louis, Mo.
 Mossberg Co., Frank, Attleboro, Mass.
 Nelson Mfg. Co., A., 2700 Southport Ave., Chicago, Ill.
 New England Pressed Steel Co., Washington Ave., Natick, Mass.
 Packer Auto Specialty Co., 1430 S. Michigan Ave., Chicago, Ill. "Ray."
 Panther—See B. A. T. Co.
 Peoria—See Auto Mechanics Tool Co.
 Ray—See Standard Motor Parts Co.
 Reschke Machine Works Co., 908 N. Washington Ave., Wichita, Kans. "E-Z."
 Robinson Equipment Co.—See Burton-Rogers Co.
 Sedgley, R. F., 2311-13 N. 16th St., Philadelphia, Pa. "Hexall."
 Southern Machine & Tool Co., 3210 Locust St., St. Louis, Mo. "Dixie." (See page 879.)
 Standard Motor Parts Co., 1430 S. Michigan Ave., Chicago, Ill. (Sole Distributors for Packer Auto Specialty Co., Chicago, Ill. "Ray.")
 Stepanion Mfg. Co., Columbus, O.
 Universal Mfg. Co., 2633 Randolph St., Lincoln, Neb.
 Utility—See Zinke Co.
 Walden-Worcester, Inc., Worcester, Mass. (See page 901.)
 Williams & Co., J. H., 38 Richards St., Brooklyn, N. Y. (See page 963.)
 Zinke Co., 1323-25 Michigan Ave., Chicago, Ill. (Sales Department for Hill Pump Valve Co., Chicago, Ill. "Utility.") (See page 771.)

WRENCHES, Valve Cap

Meyer Co., Carl, 1114-16 Dorr St., Toledo, O.

YOKE ENDS—See Yokes, Special

YOKES, Special

Ford Mfg. Co., M. J., 307-11 Newark St., Hoboken, N. J. "Gemmer."
 Gemmer—See Ford Mfg. Co.

SECTION 3

**Reference Tables
data, formulae, re-
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S. A. E. standards.
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to this section
will be found on the
pages immediately
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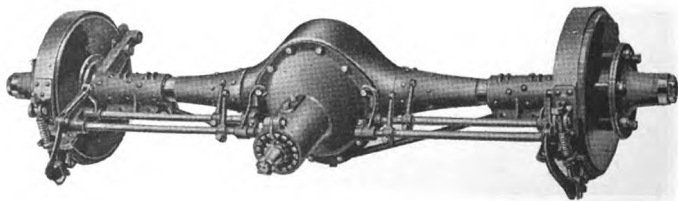




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SECTION III.

Tables and Data

Nine Horsepower Formulas

One horsepower (HP or hp) is the unit denoting the power required for raising 33,000 lb 1 ft. in 1 minute, or 550 lb. 1 ft. in 1 second, etc. It equals very nearly 0.746 kw (kilowatt) in electric power measurement. Under the metric system 1 hp equals 0.736 kw or 75 kgm (kilogram-meters) per second. The French hp (*cheval-vapeur*), as well as the German hp (*Pferdestärke* or *Pferdekraft*), thus equals 0.9866 American or British hp or 542.48 foot-pounds per second.

The actual power capacity of an automobile, motor-boat or airplane engine is ascertained by brake-block test or by other means for offering measurable resistance to its work. The term "indicated horsepower," as used for steam engines, is not properly applicable.

A horsepower formula expressing actual power capacity approximately (for a four-cycle engine), if a good value for P is known from current engine practice and tests, may be written

$$(1) \text{ Horsepower} = \frac{N}{4} \times \frac{3.1416 D^2 P \times SR}{24 \times 33,000}$$

in which N is the number of cylinders, D the bore diameter in inches, P the mean effective pressure per square inch for the power stroke, S the stroke in inches and R the number of engine revolutions per minute. In the case of a four-cylinder engine, $\frac{N}{4}$ eliminates itself.

As piston speed, in feet per minute, equals $\frac{SR}{6}$, the stroke S receives consideration incidentally when this formula is written:

$$(2) \text{ Horsepower} = \frac{N}{4} \times \frac{3.1416 D^2 P \times V}{4 \times 33,000}$$

in which V is piston speed in feet per minute.

Using metric units, a formula corresponding to (1) is written:

$$(3) \text{ Horsepower} = \frac{N}{4} \times \frac{3.1416 D^2 P \times SR}{900,000}$$

in which N is number of cylinders, D bore diameter in cm. (centimeters), P the mean effective pressure in kg (kilograms) per square cm of piston area, S the stroke in cm, and R the number of engine revolutions per minute.

With the metric notations, piston speed c in m (meters) per second, equals $\frac{SR}{100 \times 30}$ and formula (3) can therefore also be written:

$$(4) \text{ Horsepower} = \frac{N}{4} \times \frac{3.1416 D^2 P \times c}{300}$$

(Continued on following page)

Nine Horsepower Formulas

These formulas are mainly useful for comparing the values for P obtained with different sizes and designs of engines and at different speeds for any given engine, the horsepower being first decided by test. In using them for determining horsepower from dimensions and design features, the difficulty is encountered that P has a fluctuating value. It includes the percentage of mechanical efficiency of the engine as a factor and is affected by compression ratio, valve sizes and lifts, valve timing, the weight of reciprocating parts and the nature of the ignition. For any given engine, P decreases after a certain speed has been reached, while the horsepower continues to be increased until the increase of speed is balanced by the reduction of P .

For classification purposes (legislation, taxation, racing rules) and rough estimates, simplified nominal horsepower formulas are used. Those relating to automobile engines of the four-cycle internal-combustion type, operated with gasoline as fuel, are of widest general interest. They are not, as a rule, directly applicable to airplane engines, Diesel or semi-Diesel engines, steam engines or to two-cycle automobile or boat engines.

Nominal and Official Horsepower Formulas for Four-Cycle Automobile and Motor Boat Engines

The most authoritative formula for the United States is that which was adopted by the Association of Licensed Automobile Manufacturers (A. L. A. M.) in the early years of the automobile industry. After the A. L. A. M. ceased to exist, the same formula was approved by the National Automobile Chamber of Commerce (N. A. C. C.). It reads:

$$(5) \text{ Horsepower} = \frac{D^3 N}{2.5}$$

in which D is the bore diameter in inches and N the number of cylinders.

The derivation is given as follows:

The gross horsepower of a single-cylinder, four-cycle engine is equal to one-quarter times the mean effective pressure P , acting throughout the working stroke, times the area of the piston A , in square inches, times the piston speed S divided by 33,000, thus,

$$\text{Gross horsepower} = \frac{P A S}{33,000}$$

Multiplying this by the number of cylinders N gives the gross horsepower for an engine of the given number of cylinders, and further multiplying by the mechanical efficiency of the engine E gives the brake horsepower. Therefore the complete equation for brake horsepower:

$$\text{Brake horsepower} = \frac{P A S N E}{33,000 \times 4}$$

The A. L. A. M. assumed that all motor car engines will deliver or should deliver their rated power at a piston speed of 1,000 feet per minute that the mean effective pressure in such engine cylinders will average 90 pounds per square inch, and that the mechanical efficiency will average 75 per cent.

Substituting these values in the above B. P. equation, and substituting for A its equivalent, $.7854 D^2$, the equation reads:

$$\text{Brake horsepower} = \frac{90 \times 0.7854 D^2 \times 1,000 \times N \times 0.75}{33,000 \times 4}$$

and combining the numerical values it reduces to:

$$\text{Brake horsepower} = \frac{D^3 N}{2.489}$$

or, in round numbers, with a denominator 2.5.

Another formula of American origin is one proposed by E. P. Roberts. It gives:

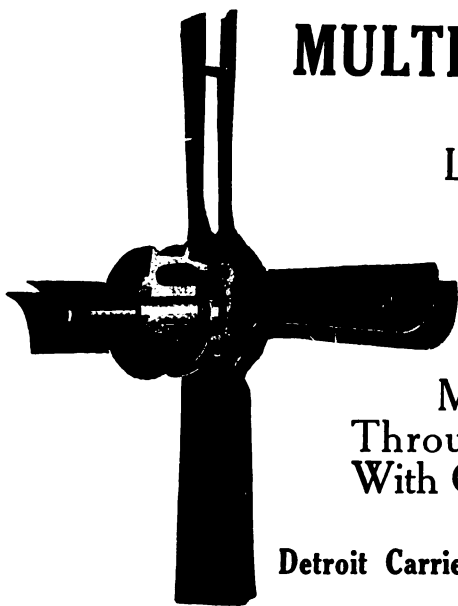
$$(6) \text{ Horsepower} = \frac{D^3 L R N}{18,000}$$

in which D and L are bore and stroke in inches, R the number of crankshaft revolutions per minute and N the number of cylinders.

With the same connotation for D and L the Royal Automobile Club of Great Britain and the British Institution of Automobile Engineers have used the formula:

$$(7) \text{ Horsepower} = 0.45 (D + L) (D - 1.18), \text{ for each cylinder.}$$

(Continued on following page)



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Nine Horsepower Formulas

The official German formula by which taxation was regulated until war began in 1914 read

$$(8) \text{ Horsepower} = 0.3 \times id^3s$$

in which i is the number of cylinders, d the bore diameter in cm (centimeters) and s the stroke in m (meters).

The official French formula adopted in 1912 and 1913 has:

$$(9) \text{ Horsepower} = K n D^3 L \times \omega$$

in which K is 0.00020 for single-cylinder engines, 0.00015 for 4-cylinder engines and 0.00013 for engines with more than 4 cylinders. D and L are bore in cm. (centimeters) and stroke in mm (millimeters), n is the number of cylinders, and ω is the practicable maximum number of crankshaft revolutions per second on the road, the determination being subject to the best judgment of the supervising authorities, with consideration of gear ratio and other features of the vehicle in which the engine is used.

For comparison, a modern automobile engine may be rated by each of the formulas (5), (6), (7), (8) and (9) and the difference in results noted. Let the engine have the following characteristics: 4 cylinders, bore 3 inches, stroke 5 inches, mean effective pressure for three-fourths of the working stroke 130 lb., piston speed 2000 feet per minute (2400 r.p.m.), and mechanical efficiency, 75 per cent.

By formula (5) the N. A. C. C., the rating is

$$HP = \frac{36}{2.5} = 14 \frac{2}{5}$$

By formula (6), the E. P. Roberts, it is

$$HP = \frac{9 \times 5 \times 2400 \times 4}{18,000} = 24$$

By formula (7), British I. A. E., it is

$$HP = 0.45 (3 + 5) \times (3 - 1.18) = 3.60 \times 1.82 = 6.552$$

Multiplying by 4, the number of cylinders, gives 26.108.

By formula (8), German official, it is

$$HP = 0.3 \times 4 \times 57.76 \times 0.127 = 8.80$$

By formula (9), French official rating, it is

$$HP = 0.00015 \times 4 \times 57.76 \times 12.7 \times 30 = 13.20$$

on the basis of 1800 r.p.m., with the possibility that the rating may be $\frac{1}{3}$ higher, or 17.60, namely if the maximum engine speed of 2400 r.p.m. is taken as the basis.

Two-Cycle Automobile and Motor Boat Engines

The two-cycle engine has twice as many working strokes as the four-cycle engine, but its horsepower is often figured from a four-cycle formula by multiplying the result by 1.65, instead of by 2, to allow for the usually lessened efficiency (especially the volumetric efficiency or ability to receive a full charge of fuel mixture) of this type at the higher speeds.

Index to Tables and Data Appears on Pages 969 and 970

HORSEPOWER TABLE BY N.A.C.C. (FORMERLY A.L.A.M.)

In using table, find bore of cylinder in inches or millimeters in the proper left hand column, then read across to right under column for the number of cylinders that the motor under consideration has.

BORE = D		NUMBER OF CYLINDERS = N			
Inches	Millimeters	4	6	8	12
2 1/2.....	64	10.00	15.00	20.00	30.00
2 5/8.....	68	11.03	16.54	22.05	33.08
2 3/4.....	70	12.10	18.15	24.20	36.30
2 7/8.....	73	13.23	19.84	26.45	39.68
3.....	76	14.40	21.60	28.80	43.20
3 1/8.....	79	15.63	23.44	31.25	46.88
3 1/4.....	83	16.90	25.35	33.80	50.70
3 3/8.....	85	18.23	27.34	36.45	54.68
3 1/2.....	89	19.60	29.40	39.20	58.80
3 5/8.....	92	21.03	31.54	42.05	63.08
3 3/4.....	95	22.50	33.75	45.00	67.50
3 7/8.....	99	24.03	36.04	48.05	72.08
4.....	102	25.60	38.40	51.20	76.80
4 1/8.....	105	27.23	40.84	54.45	81.68
4 1/4.....	108	28.90	43.35	57.80	86.70
4 3/8.....	111	30.63	45.94	61.25	91.88
4 1/2.....	114	32.40	48.60	64.80	97.20
4 5/8.....	118	34.23	51.34	68.45	102.68
4 3/4.....	121	36.10	54.15	72.20	108.30
4 7/8.....	124	38.03	57.04	76.05	114.08
5.....	127	40.00	60.00	80.00	120.00
5 1/8.....	130	42.03	63.04	84.05	126.08
5 1/4.....	133	44.10	66.15	88.20	132.30
5 3/8.....	137	46.23	69.34	92.45	138.68
5 1/2.....	140	48.40	73.60	96.80	145.20
5 5/8.....	143	50.63	75.94	101.25	151.88
5 3/4.....	146	52.90	79.35	105.80	158.70
5 7/8.....	149	55.23	82.84	110.45	165.68
6.....	152	57.60	86.40	115.20	172.80

Table of Electrical Horsepower

Volts		Amperes											
		1	10	20	30	40	50	60	70	80	90	100	110
1	.00134	.0134	.0268	.0402	.0536	.0670	.0804	.0938	.1072	.1206	.1341	.1475	
5	.00670	.0670	.1341	.2011	.2681	.3351	.4022	.4692	.5362	.6032	.6703	.7373	
10	.01341	.1341	.2681	.4022	.5362	.6703	.8043	.9383	1.072	1.206	1.341	1.475	
15	.02011	.2011	.4022	.6032	.8043	1.005	1.206	1.408	1.609	1.810	2.011	2.212	
20	.02681	.2681	.5362	.8043	1.072	1.340	1.609	1.877	2.145	2.413	2.681	2.949	
25	.03351	.3351	.6703	1.005	1.341	1.676	2.011	2.346	2.681	3.016	3.351	3.686	
30	.04022	.4022	.8043	1.206	1.609	2.011	2.413	2.815	3.217	3.619	4.022	4.424	
35	.04692	.4692	.9384	1.408	1.877	2.346	2.815	3.284	3.753	4.223	4.692	5.161	
40	.05362	.5362	1.072	1.609	2.145	2.681	3.217	3.753	4.290	4.826	5.362	5.898	
45	.06032	.6032	1.206	1.810	2.413	3.016	3.619	4.223	4.826	5.439	6.032	6.635	
50	.06703	.6703	1.341	2.011	2.681	3.351	4.022	4.692	5.362	6.032	6.703	7.373	
75	.10054	1.005	2.011	3.016	4.021	5.027	6.032	7.037	8.043	9.048	10.05	11.06	
100	.13405	1.341	2.681	4.022	5.362	6.703	8.043	9.384	10.72	12.06	13.41	14.75	
500	.67025	6.703	13.41	20.11	26.81	33.51	40.22	46.92	53.62	60.32	67.03	73.73	
1,000	1.3405	13.41	26.81	40.22	53.62	67.03	80.43	93.84	107.2	120.6	134.1	147.5	
5,000	6.7025	67.03	134.1	201.1	268.1	335.1	402.2	469.2	536.2	603.2	670.3	737.3	
10,000	13.405	134.1	268.1	402.2	536.2	670.3	804.3	938.3	1072.	1206.	1341.	1475.	

Rule: $\frac{\text{Number of volts multiplied by number of amperes}}{746} = \text{number of horsepower; usually written : } \frac{VA}{746} = \text{hp.}$

Condensed Table of Piston Displacements

For Bores and Strokes progressing by $\frac{1}{16}$ in.

D = bore; S = stroke; A = area in sq. in. of cross-section = $D^2 \times 0.7854$; N = number of cylinders
 Piston displacement = ASN cub. in. = $16.387 ASN$ cubic centimeters.

Bore and Stroke		A = area of Section	Bore and Stroke		A = area of Section	Bore and Stroke		A = area of Section
By $\frac{1}{16}$ In.	Deci- mal		By $\frac{1}{16}$ In.	Deci- mal		By $\frac{1}{16}$ In.	Deci- mal	
$2\frac{1}{16}$	2.2500	3.9761	$3\frac{1}{16}$	3.5625	9.9678	$4\frac{1}{16}$	4.8750	18.665
$2\frac{1}{8}$	2.3125	4.2000	$3\frac{1}{8}$	3.6250	10.3210	$4\frac{1}{8}$	4.9375	19.147
$2\frac{3}{16}$	2.3750	4.4301	$3\frac{3}{16}$	3.6875	10.6800	5	5.0000	19.635
$2\frac{1}{2}$	2.4375	4.6664	$3\frac{1}{2}$	3.7500	11.045	$5\frac{1}{16}$	5.0625	20.129
$2\frac{5}{8}$	2.5000	4.9097	$3\frac{5}{8}$	3.8125	11.416	$5\frac{1}{8}$	5.1250	20.629
$2\frac{3}{4}$	2.5625	5.1572	$3\frac{3}{4}$	3.8750	11.793	$5\frac{3}{16}$	5.1875	21.135
$2\frac{7}{8}$	2.6250	5.4129	$3\frac{7}{8}$	3.9375	12.177	$5\frac{1}{2}$	5.2500	21.648
$2\frac{9}{16}$	2.6875	5.6727	4	4.0000	12.566	$5\frac{5}{16}$	5.3125	22.166
$2\frac{1}{2}$	2.7500	5.9396	$4\frac{1}{16}$	4.0625	12.962	$5\frac{1}{2}$	5.3750	22.691
$2\frac{11}{16}$	2.8125	6.2126	$4\frac{1}{8}$	4.1250	13.364	$5\frac{3}{8}$	5.4375	23.221
$2\frac{13}{16}$	2.8750	6.4918	$4\frac{3}{16}$	4.1875	13.772	$5\frac{1}{2}$	5.5000	23.758
$2\frac{15}{16}$	2.9375	6.7771	$4\frac{1}{4}$	4.2500	14.186	$5\frac{7}{16}$	5.5625	24.301
3	3.0000	7.0686	$4\frac{1}{8}$	4.3125	14.607	5	5.6250	24.850
$3\frac{1}{16}$	3.0625	7.3662	$4\frac{3}{8}$	4.3750	15.033	$5\frac{1}{2}$	5.6875	25.406
$3\frac{1}{8}$	3.1250	7.6699	$4\frac{5}{8}$	4.4375	15.466	5	5.7500	25.967
$3\frac{3}{16}$	3.1875	7.9798	$4\frac{1}{2}$	4.5000	15.904	$5\frac{3}{8}$	5.8125	26.535
$3\frac{1}{2}$	3.2500	8.2958	$4\frac{3}{4}$	4.5625	16.349	5	5.8750	27.109
$3\frac{5}{8}$	3.3125	8.6179	$4\frac{7}{8}$	4.6250	16.800	$5\frac{1}{2}$	5.9375	27.688
$3\frac{3}{4}$	3.3750	8.9462	$4\frac{9}{16}$	4.6875	17.257	6	6.0000	28.274
$3\frac{7}{8}$	3.4375	9.2806	$4\frac{11}{16}$	4.7500	17.728	$6\frac{1}{16}$	6.0525	28.771
$3\frac{9}{16}$	3.5000	9.6211	$4\frac{13}{16}$	4.8125	18.190	$6\frac{1}{8}$	6.1250	29.465

Multiply the area figure by the stroke, using the decimal column for the stroke figure.

For example: $D = 3\frac{1}{8}$ in., gives $A = 7.3662$; Stroke = $S = 4\frac{1}{4}$ in. = 4.8750 in.

Multiply 7.3662
by 4.8750

00000
368311
515634
589296
294648

35.91022510

As 4 decimals were used in each figure, the period is placed $4 + 4 = 8$ places from the right, making the result 35.9102 cub. in. of piston displacement for each cylinder.

To get piston displacement for the engine, multiply this figure by N, the number of cylinders.

For a 4-cyl. engine, this makes in the example

35.9102 cub. in.
 $\times 4$

143.6408 cub. in. for the engine.

If it is desired to know the equivalent in cm.³ (cubic centimeters),

Multiply 143.6408
by 16.387

10054856
11491264
4309224
8618448
1436408

2353.8417896

As there are 4 decimals in the first figure and 3 decimals in the second, the period comes $4 + 3 = 7$ places from the right, and the total piston displacement of the engine is 2353.842 cm.³ (cubic centimeters).

Speed in Miles or Kilometers per Hour for an Elapsed Time of from 1 to 3 Minutes Over a Measured Mile or Kilometer

Time Over Measured Mile or Kilometer	Rate of Speed in Miles or Kilometers per Hour	Time Over Measured Mile or Kilometer	Rate of Speed in Miles or Kilometers per Hour	Time Over Measured Mile or Kilometer	Rate of Speed in Miles or Kilometers per Hour
Min. Sec.		Min. Sec.		Min. Sec.	
1 0	60.00	1 27	41.38	1 54	31.58
1 1	59.00	1 28	40.91	1 55	31.30
1 2	58.06	1 29	40.45	1 56	31.03
1 3	57.14	1 30	40.00	1 57	30.77
1 4	56.25	1 31	39.56	1 58	30.50
1 5	55.38	1 32	39.13	1 59	30.25
1 6	54.54	1 33	38.71	2 0	30.00
1 7	53.73	1 34	38.29	2 3	29.26
1 8	52.94	1 35	37.89	2 6	28.57
1 9	52.17	1 36	37.50	2 9	27.90
1 10	51.42	1 37	37.11	2 12	27.27
1 11	50.70	1 38	36.73	2 15	26.66
1 12	50.00	1 39	36.36	2 18	26.08
1 13	49.31	1 40	36.00	2 21	25.53
1 14	48.65	1 41	35.64	2 24	25.00
1 15	48.00	1 42	35.29	2 27	24.49
1 16	47.37	1 43	34.95	2 30	24.00
1 17	46.75	1 44	34.61	2 33	23.53
1 18	46.15	1 45	34.28	2 36	23.07
1 19	45.57	1 46	33.96	2 39	22.64
1 20	45.00	1 47	33.64	2 42	22.22
1 21	44.44	1 48	33.33	2 45	21.81
1 22	43.90	1 49	33.03	2 48	21.42
1 23	43.37	1 50	32.72	2 51	21.05
1 24	42.85	1 51	32.43	2 54	20.69
1 25	42.35	1 52	32.14	3 0	20.00
1 26	41.86	1 53	31.86	.. ..	.....

Speed Equivalents for 1 Mile and 1 Kilometer

- 1 mile per hour = 88 ft. per minute.
 = 1.46 ft. per second.
 = 27.8 metres per minute.
 = 0.463 metre per second.
 1 km. per hour = 0.6214 miles per hour.
 = 54.9 ft. per minute.
 = 0.288 metre per second.

Relations between the Speed of a Car and the Number of Revolutions per Minute of the Road Wheels

To find the number of r.p.m. of road wheels, divide the speed in m.p.h. by diameter of wheel in inches and multiply by 336.134.

To find m.p.h. of car, multiply r.p.m. of road wheel by wheel diameter in inches and divide by 336.134.

These rules are derived as follows: 1 m.p.h. equals 88 ft. per minute, or 12×88 inches (= 1056 inches) per minute. The circumference of the road wheel, if its diameter in inches is D , is $D\pi$ and $\pi = 3.1416$. Therefore:

$$\text{Number of r.p.m.} = \frac{\text{Number of m.p.h.} \times \frac{D}{1056}}{\text{Number of m.p.h.} \times \frac{D}{336.134}}$$

The accompanying table gives the equivalents of m.p.h. in feet per minute, and applies the rules, as given above, to road wheels from 24 to 44 inches and for speeds up to 40 m.p.h.

Miles per Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24	26	28	30	35	40	
Per Foot Minute	88	176	264	352	440	528	616	704	792	880	968	1,056	1,144	1,232	1,320	1,418	1,496	1,584	1,672	1,760	1,836	2,112	2,288	2,464	2,640	3,080	3,520	
Inches per Second	24.14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280	308	336	364	392	420	490	560	
	26.12	92.21	84.38	76.51	69.63	61.77	53.90	46.03	38.16	30.29	22.42	14.55	07.68	180.92	192.84	204.76	216.69	228.61	240.53	252.46	264.38	310.33	361.94	397.69	432.30	516.92		
	28.12	92.21	84.38	76.51	69.63	61.77	53.90	46.03	38.16	30.29	22.42	14.55	07.68	180.92	192.84	204.76	216.69	228.61	240.53	252.46	264.38	310.33	361.94	397.69	432.30	516.92		
	30.12	92.21	84.38	76.51	69.63	61.77	53.90	46.03	38.16	30.29	22.42	14.55	07.68	180.92	192.84	204.76	216.69	228.61	240.53	252.46	264.38	310.33	361.94	397.69	432.30	516.92		
	32.12	92.21	84.38	76.51	69.63	61.77	53.90	46.03	38.16	30.29	22.42	14.55	07.68	180.92	192.84	204.76	216.69	228.61	240.53	252.46	264.38	310.33	361.94	397.69	432.30	516.92		
	34.12	92.21	84.38	76.51	69.63	61.77	53.90	46.03	38.16	30.29	22.42	14.55	07.68	180.92	192.84	204.76	216.69	228.61	240.53	252.46	264.38	310.33	361.94	397.69	432.30	516.92		
	36.12	92.21	84.38	76.51	69.63	61.77	53.90	46.03	38.16	30.29	22.42	14.55	07.68	180.92	192.84	204.76	216.69	228.61	240.53	252.46	264.38	310.33	361.94	397.69	432.30	516.92		
	38.12	92.21	84.38	76.51	69.63	61.77	53.90	46.03	38.16	30.29	22.42	14.55	07.68	180.92	192.84	204.76	216.69	228.61	240.53	252.46	264.38	310.33	361.94	397.69	432.30	516.92		
	40.12	92.21	84.38	76.51	69.63	61.77	53.90	46.03	38.16	30.29	22.42	14.55	07.68	180.92	192.84	204.76	216.69	228.61	240.53	252.46	264.38	310.33	361.94	397.69	432.30	516.92		
	42.12	92.21	84.38	76.51	69.63	61.77	53.90	46.03	38.16	30.29	22.42	14.55	07.68	180.92	192.84	204.76	216.69	228.61	240.53	252.46	264.38	310.33	361.94	397.69	432.30	516.92		
Feet per Second	34.9	8.88	19.70	29.04	38.39	47.73	57.07	66.41	75.75	85.09	94.43	103.77	113.11	122.45	131.79	141.13	150.47	159.81	169.15	178.49	187.83	197.17	206.51	215.85	225.19	234.53	243.87	
	36.9	9.33	18.66	28	37.33	46.66	56	65.33	74.66	84	93.33	102.66	112	121.33	130.66	140	149.33	158.66	168	177.33	186.66	195.33	204	212.66	221.33	230	238.66	
	38.9	8.17	68.28	82.35	96.42	110.49	124.56	138.63	152.70	166.77	180.84	194.91	208.98	223.05	237.12	251.19	265.26	279.33	293.40	307.47	321.54	335.61	349.68	363.75	377.82	391.89	405.96	
	40.9	8.16	24.32	32.62	40.92	49.22	57.52	65.82	74.12	82.42	90.72	99.02	107.32	115.62	123.92	132.22	140.52	148.82	157.12	165.42	173.72	182.02	190.32	198.62	206.92	215.22	223.52	
	42.9	8.16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160	176	192	208	224	240	256	272	
	44.9	7.63	19.37	22.10	30.54	38.18	45.81	53.45	61.09	68.73	76.36	84	91.63	99.26	106.10	114.54	123.18	129.81	137.45	145.09	156.72	168	183.37	198.54	213.81	229.06	257.37	305.45
	Wheel Diameter in Inches	24	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280	308	336	364	392	420	490
		26	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	264	288	312	336	360	432
		28	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	264	288	312	336	360	432
		30	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	264	288	312	336	360	432
32		12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240	264	288	312	336	360	432	
34		9.88	19.70	29.04	38.39	47.73	57.07	66.41	75.75	85.09	94.43	103.77	113.11	122.45	131.79	141.13	150.47	159.81	169.15	178.49	187.83	197.17	206.51	215.85	225.19	234.53	243.87	
36		9.33	18.66	28	37.33	46.66	56	65.33	74.66	84	93.33	102.66	112	121.33	130.66	140	149.33	158.66	168	177.33	186.66	195.33	204	212.66	221.33	230	238.66	
38		8.17	68.28	82.35	96.42	110.49	124.56	138.63	152.70	166.77	180.84	194.91	208.98	223.05	237.12	251.19	265.26	279.33	293.40	307.47	321.54	335.61	349.68	363.75	377.82	391.89	405.96	
40		8.16	24.32	32.62	40.92	49.22	57.52	65.82	74.12	82.42	90.72	99.02	107.32	115.62	123.92	132.22	140.52	148.82	157.12	165.42	173.72	182.02	190.32	198.62	206.92	215.22	223.52	
42		8.16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160	176	192	208	224	240	256	272	
44	7.63	19.37	22.10	30.54	38.18	45.81	53.45	61.09	68.73	76.36	84	91.63	99.26	106.10	114.54	123.18	129.81	137.45	145.09	156.72	168	183.37	198.54	213.81	229.06	257.37	305.45	

Car Speed at 1000 R.P.M.

What is speed in m.p.h. at 1000 r.p.m. of engine with road wheels of different sizes? Assumed: the use of direct gear and a $\frac{1}{2}$ bevel-gear ratio; also a speed reduction of 3 per cent due to tire compression and slip.

Answer: If d is wheel diameter in inches (reduced to feet by dividing by 12), one has (since 88 ft. per minute equals 1 m.p.h.):

$$\text{Number of m.p.h.} = \frac{d \times 1000}{3 \times 12 \times 88} = \frac{d \times 3141.6}{3168} = d - 1\% \text{ (approx.)}$$

The m.p.h. thus equal the wheel diameter in inches minus 4 per cent, with the 3 per cent allowance for tire action, and a $\frac{1}{2}$ gear ratio.

Similarly, for a $\frac{1}{4}$ ratio (old type racing car) the m.p.h. equals $3d - 4$ per cent.

From this, the m.p.h. obtained with any other ratio of total reduction is easily found by reducing $3d$ correspondingly and deducting 4 per cent. A $\frac{1}{4}$ ratio (representing low gear, for example) gives $\frac{1}{2}d - 4$ per cent.

For other engine speeds than 1000 r.p.m., increase or reduce in proportion.

The following table shows the approximate speed in m.p.h. for different wheel diameters and gear ratios, at 1000 r.p.m. of engine.

Gears	12:1	9:1	7:1	5:1	4:1	3½:1	3:1	2½:1	2:1	1:1
30-in. wheel.....	7.2	9.6	12.3	17.3	21.6	24.7	28.8	34.6	43.2	86.4
32-in. wheel.....	7.7	10.2	13.2	18.4	23.1	26.4	30.7	36.8	46.1	92.2
33-in. wheel.....	7.9	10.6	13.6	19.0	23.8	27.2	31.7	38.0	47.5	95.0
34-in. wheel.....	8.2	10.9	13.9	19.6	24.5	27.9	32.6	39.2	49	97.9
36-in. wheel.....	8.6	11.5	14.8	20.7	25.9	29.6	34.6	41.4	51.9	103.7
38-in. wheel.....	9.1	12.2	15.6	21.9	27.4	31.2	36.5	43.8	54.7	109.4
40-in. wheel.....	9.6	12.8	16.5	23.0	28.8	32.9	38.4	46.0	57.6	115.2
42-in. wheel.....	10.1	13.4	17.3	24.2	30.3	34.6	40.3	48.4	60.5	121.0
44-in. wheel.....	10.6	14.1	18.1	25.3	31.7	36.2	42.2	50.6	63.4	126.7

Speedometer and Odometer Readings.

Odometers serve mainly the following purposes:

- 1—To ascertain the mileage of tires.
- 2—To keep track of monthly and yearly service of a vehicle.
- 3—To furnish a control upon the daily work of drivers.
- 4—To check illegitimate use of a vehicle.
- 5—To ascertain mileage of a day's journey or a tour.

If driven from a front wheel the odometer will record the slippage as well as the mileage of the front wheel.

If driven from a rear wheel, it will record slippage (spinning) as well as mileage of that wheel.

If driven from a transmission shaft, it will record slipping (spinning) of both rear wheels.

It seems to be the consensus of opinion that these sources of error are negligible so far as any of the purposes above mentioned are concerned.

Error due to insufficient inflation of air tires is also negligible, as either the soft tire maintains contact with the ground along the entire circumference of its tread—the circumference being merely ovalized—or else, in the case of a flat tire whose tread buckles under the driving effort, very little distance is covered under the abnormal condition.

Errors due to roughness of road are found to compensate for themselves, the bounding and the indentations of the tread resulting as often in advancement as in retardation.

The only notable error arises in connection with commercial motor vehicles when the wheel diameter is reduced by the wearing down of solid rubber tires.

Reliable data on speedometer and odometer readings have not yet been systematically gathered.

Air and Wind Pressure

On this subject reliable data are yet to be formulated and established.

When an object is moved in the atmosphere or a current of air strikes an object, a pressure is produced, but the natural laws governing the force and nature of the pressure are as yet understood only in part.

According to previously accepted ideas, which were applied in practice mainly to figure maximum wind pressure upon buildings and bridges, the pressure in pounds, P , against a squarely apposed plane area, S square feet, at a wind velocity of V miles per hour, was expressed in the formula: $P = 0.0025 SV^2$, various investigators having gradually reduced the numerical factor from 0.005, which was first supposed to be correct, to one-half of this value.

In applying this formula to irregular shapes or to plane surfaces held at an angle smaller than 90 deg. to the direction of movement and air resistance, it has been customary to assume that the effective area S is the horizontal projection of the actual area. For example, it has been supposed that a windshield held at an angle of 60 deg. is equivalent, so far as air resistance is concerned, to one standing vertically and reaching to the same height. Its area would be 0.87 of that of the sloping shield, but the reduction of air resistance is much more than 13 per cent.

The principal flaw, both in the basic formula and in the projected-area theory lies in disregarding body shapes and dimensions and assuming that frontal area alone determines air and wind resistance. If the question is one of wind resistance in a motor car, the direction of the wind is an additional factor that baffles calculation and renders any application of previously accepted theories useless.

More modern views originate from experiments with streamline shapes to determine the best shapes for boats. A square or oblong piece of soap that is dragged through water by a string passing through the soap assumes gradually by the wear due to resistance of the water the shape now characterized as "streamline," which is an oval, more elongated and more pointed at the rear the faster the dragging movement has been. This agreed with the requirement of considerable length for fast boats. In airplane experiments it was similarly found that the adoption of streamline sections for construction parts reduced air resistance and the formation of eddies. Air being much lighter and more elastic than water, and having a mobility of a different character, the streamline shapes for aircraft were not in all respects identical with those for boats, but the main principle found to be fully established in both cases was the same, to the effect that the resistance encountered by moving an object against water or air cannot be determined from the areas opposed to the movement and the speed, but undergoes radical changes if the shapes or dimensions of the object are altered without altering the frontal area. And it has been further established that different speeds call for different shapes if the minimum of resistance for a given frontal area shall be realized.

The Eiffel aerodynamical laboratory of Paris, France, gives the following co-efficients for wind pressures against objects of various shapes:

Against flat circular plate	0.0028
flat square plate	0.0030
sphere	0.000445
round side of hollow hemisphere	0.0081
hollow side of hollow hemisphere	0.00384
apex (60 degrees) of cone	0.0013
apex (30 degrees) of cone	0.00085
apex (20 degrees) of cone	
with hemispherical bottom	0.000406
hemispherical bottom of same	0.000222

The pressure upon a rectangular plate is greater than the pressure upon a square or round plate of same area, probably largely because its circumference is greater.

The power required for overcoming wind pressure is: $\text{Power} = VP$, where V is the velocity and P the pressure or resistance. Inserting the value for P , with K denoting the co-efficient, one has

$$\text{Power} = KSV^3$$

This means that the resistance or pressure must be overcome at the rate at which it is created, and the formula could be quite correct if it were certain that the formula for pressure or resistance ($P = KSV^2$) were reliable. V^3 is in reality found to be too high for low velocities and too low for high velocities. Many find it difficult to perceive that the power should be according to the cube of the velocity. It helps the understanding, however, to note that the pressure of KSV^2 cannot be reached before the power has reached the value of KSV^3 in producing it.

(Continued on following page)

According to measurements by the United States Signal Service at Mount Washington, N. H., the wind pressure against a vertical plane with nothing behind it is as follows, in pounds per square foot:

Miles Per Hour	Pressure	Miles Per Hour	Pressure
10	0.4	50	10.0
20	1.6	60	14.4
30	3.6	80	25.6
40	6.4	100	40.0

and upon a cylindrical surface the pressure is one-half of these figures for the same frontal area, but this is subject to variation according to whether there is a cylindrical, a flat or a hollow surface at the back of the cylindrical surface turned against the wind.

Features in which automobile design is affected by the greater or lesser knowledge at disposal with reference to pressures and movements of the atmosphere are as follows:

Shapes of vehicles (front, rear, top, bottom and wheels) producing a minimum of air resistance for fast driving or driving against a high wind.

The position and area of windshields and headlights.

The air channels in radiators.

The regulation of air passage under the hood, especially at the carbureter intakes.

Design and timing of intake and exhaust valves.

The ventilating fan and its position.

The carbureter and manifold channels.

The exhaust pipe and the muffler, where sounds as well as resistances are affected.

Provisions for reducing the dust nuisance through vehicle design causing least atmospheric disturbance and eddies along the road surface.

Provisions for making road grit and dust strike the vehicle body and its occupants in as small a measure as possible.

The design of dynamometers intended to measure power by air resistance against the movement of rotated blades.

At all these points the designer's understanding of the air pressures and movements involved is following far behind actual construction based on experience, or is deliberately subordinated, as being unsafe, to conventional design.

Hill Climbing Formulas

Contests for ascertaining the different capacities of different cars for ascending long and steep hills at a maximum of speed are no longer of interest as a means for determining what power, weight and gear proportions should be incorporated in a motor vehicle or for spreading information among the public with regard to car requirements or car merits. By reason of the increased power and reliability of modern engines, the result of an ordinary hill-climbing contest is now dominated by the proportion between power and weight. Long and steep hills can be ascended by almost any motor vehicle at a rate of speed which is higher than desirable, considering the wear and tear of tires. The importance of certain relations between gear speed ratio and the useful range of engine speed, which was very pronounced in the days of small and uncertain engine power, is much reduced, yet these relations are still decisive for getting the best hill-climbing ability from a given proportion of power and weight.

The influence of gear ratio and useful engine speed has not so far been expressed in a formula, however, while old so-called hill-climbing formulas have been discarded as worthless for practical purposes, their place being taken largely by rules for car performance tests, as formulated or projected by the Society of Automotive Engineers (S. A. E. Bulletin, May, 1917, p. 141 to 155) and similar organizations in foreign countries.

If a car has four gear speeds proportioned as 1, 1.6, 2.6 and 4.2 and the useful engine speed ranges from 1200 to 1800 revolutions per minute, the vehicle speed on one of the gears at 1200 r.p.m. remains a little higher than it can be at 1800 r.p.m. on the next lower gear, which is 1.6 times slower, as $1200 \times 1.6 = 1920$. Such a car can drop to the next lower gear on any hill without losing much speed. If the ratio from gear to gear is 1.5, all the loss will be that due to the time required for acceleration and the lesser efficiency of the lower gear. With a ratio of 1.4, making the progression 1, 1.4, 1.96 and 2.75, these factors would be taken care of, and any hill could be ascended at the top speed possible with the power available.

Supposing the car has only three gearspeeds, 1, 2.4 and 5.76, the intermediate ratio being 2.4, then a grade of the hill rendering a lower gear necessary results in a loss of vehicle speed, as the engine speed can be raised only from 1200 to 1800, in the proportion of 1.5 to 1, while the gearspeed drops as from 2.4 to 1. With such a gear equipment the hill-climbing ability therefore depends on the grades of the hill. In competition with a car of equal power and weight having a 1.6 second gear, it will lose, if the hill is such as to make the 1.6 gear sufficiently powerful, but it will win if the grade is steep enough to compel the use of the 2.6 gear on the other car. *(Continued on following page)*

Hill-climbing contests are therefore either a gamble on the suitability of certain gear ratios for certain hills, or else demonstrations of the self-evident fact that the principal requirement is high power per weight unit.

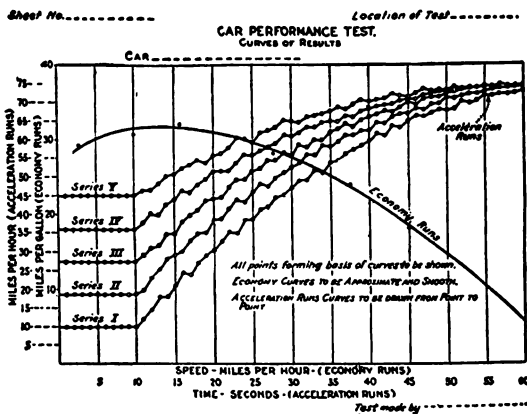
The torque curve of the engine would be a factor of more than minor importance if it were not considered beforehand in determining the "useful range of engine speed".

Hill-climbing tests are now resorted to mainly for determining the properties of one fuel in comparison with those of another fuel, the contesting cars being alike; or one car-bureter against another; one kind of tires against another.

Complete Car Performance Tests

Tests relating to all the principal operative properties of a car are recommended by the Research Division of the Society of Automotive Engineers. The complete test includes a series of runs at various specified speeds from the minimum to the maximum speed of the car in order to determine fuel consumption and five series of acceleration runs, starting at various specified speeds from the minimum speed of the car on high gear to about 30 miles per hour. In each run the acceleration period allowed is 50 seconds.

To produce uniform conditions as a basis for comparisons, the recommendations include description and illustrations of the apparatus used, and detailed directions for conducting the runs, weighing the fuel, measuring the acceleration, and computing and recording the results. Forms also are provided for recording the specifications of the car and other pertinent data, for recording the observations and for plotting the results.



For the fuel economy runs, the amount of fuel used is determined by weighing in special tanks, and the distance covered is regulated by using measured courses of prescribing length and character. For the acceleration runs a recording instrument has been designed to produce on a continuous strip of moving paper parallel records of seconds and of distance. The seconds record is obtained from an electric chronometer, and the distance record by an electric spark puncturing the paper once for each one-fifth of a revolution of a front wheel of the car.

The results of the whole test are plotted on one chart in the form of curves as roughly indicated in the sketch herewith.

Index to Tables and Data Appears on Pages 969 and 970

Thermometer Scales

FAHRENHEIT CENTIGRADE REAUMUR			FAHRENHEIT CENTIGRADE REAUMUR			FAHRENHEIT CENTIGRADE		
95	35	28	230	110	88	2100	1148.9	
90	32.2		221	105	84	2000	1093.3	1100
86	30	24				1900	1037.8	
80	26.6		212	100	80	1800	982.2	1000
77	25	20				1700	926.7	
70	21.1		203	95	76	1600	871.1	900
68	20	16				1500	815.5	800
60	15.5	12	194	90	72	1400	760	
50	10	8	185	85	68	1300	704.0	700
40	4.4	4	176	80	64	1200	648.9	
32	0	0	167	75	60	1100	593.3	600
30	-1.1		158	70	55	1000	537.8	
23	-5	-4	149	65	52	900	482.2	500
20	-6.7		140	60	48	800	426.7	400
14	-10	-8	131	55	44	700	371.1	
10	-12.2		122	50	40	600	315.5	300
5	-15	-12	113	45	36	500	260	
0	-17.8	-14.22	104	40	32	400	204.4	200
-4	-20	-16	95	35	28	300	148.9	
-10	-23.3	-20						
-13	-25	-20						
-20	-28.9	-24						
-22	-30	-24						
-30	-34.4	-28						
-31	-35	-28						
-40	-40	-32						

METAL WORKING and HEAT-TREATMENT TEMPERATURES in FAHR and CENTIG. SCALES

Fahrenheit:- $F = \frac{9}{5}C + 32$; also: $F = \frac{9}{4}R + 32$ Centigrade:- $C = \frac{5}{9}(F - 32)$ or $\frac{5}{9}F - 17.78$; also: $C = \frac{5}{4}R$ Réaumur:- $R = \frac{4}{9}(F - 32)$ or $\frac{4}{9}F - 14.22$; also: $R = \frac{4}{5}C$

For "Boiling Point of Water at Various Altitudes" see page 1034.

(Continued on following page)

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Thermometer Scales

In order to convert degrees Fahrenheit (F.) into degrees Centigrade (C.), subtract 32, multiply the remainder by 5 and divide by 9. To turn Centigrade into Fahrenheit, multiply the number of deg. C. by 9, divide by 5 and add 32.

The Réaumur scale is still largely used in France. Five degrees C. equal 4 degrees R.

These relations are expressed in the formulas at the foot of the appended scales. They also indicate another mode of converting F. into C.; namely, multiply F. by $\frac{5}{9}$ and deduct 17.78, the latter figure representing $32 \times \frac{5}{9}$ or the number of degrees C. that the F. zero is lower than the C. zero. This mode of figuring has the advantage that it is not necessary to remember, or reason out, whether 32 is to be subtracted first or last. In converting from one scale to another, numerical values are taken as negative below the zero of each scale.

Baume Hydrometer and Specific Gravity Equivalents

For liquids heavier than water (such as electrolytes of storage batteries, electro-plating baths etc.), at 60° F.

$$\text{Specific gravity} = \frac{145}{145 - ^\circ\text{Bé}} \quad \text{and} \quad \text{Baumé} = 145 - \frac{145}{\text{Sp. Gr.}}$$

Baumé	Specific Gravity	Baumé	Specific Gravity	Baumé	Specific Gravity	Baumé	Specific Gravity	Baumé	Specific Gravity
0	1.000	10	1.074	20	1.160	30	1.260	40	1.381
1	1.006	11	1.082	21	1.169	31	1.271	45	1.450
2	1.014	12	1.090	22	1.178	32	1.283	50	1.526
3	1.021	13	1.098	23	1.188	33	1.294	55	1.611
4	1.028	14	1.106	24	1.198	34	1.306	60	1.705
5	1.035	15	1.115	25	1.208	35	1.318	65	1.812
6	1.043	16	1.124	26	1.218	36	1.330	70	1.933
7	1.050	17	1.132	27	1.228	37	1.342	....	....
8	1.058	18	1.141	28	1.239	38	1.355	....	....
9	1.066	19	1.150	29	1.250	39	1.367	....	....

For liquids lighter than water (gasoline and other engine fuels), the Baumé scale is based on the formula:

$$\text{Specific gravity (at 60° F.)} = \frac{140}{130 + \text{Bé}} \quad \text{or} \quad \text{Baumé} = \frac{140}{\text{Sp. Gr.}} - 130$$

The scale is as follows

Baumé	Specific Gravity	Lbs. in Gal.	Baumé	Specific Gravity	Lbs. in Gal.	Baumé	Specific Gravity	Lbs. in Gal.	Baumé	Specific Gravity	Lbs. in Gal.
10	1.0000	8.33	31	0.8695	7.25	52	0.7692	6.42	73	0.6896	5.77
11	0.9929	8.27	32	0.8641	7.21	53	0.7650	6.39	74	0.6863	5.74
12	0.9859	8.21	33	0.8588	7.16	54	0.7608	6.36	75	0.6829	5.71
13	0.9790	8.16	34	0.8536	7.12	55	0.7567	6.32	76	0.6796	5.68
14	0.9722	8.10	35	0.8484	7.07	56	0.7526	6.29	77	0.6763	5.65
15	0.9655	8.05	36	0.8433	7.03	57	0.7486	6.26	78	0.6730	5.63
16	0.9589	7.99	37	0.8383	6.99	58	0.7446	6.22	79	0.6698	5.60
17	0.9523	7.94	38	0.8333	6.95	59	0.7407	6.19	80	0.6666	5.57
18	0.9459	7.88	39	0.8284	6.91	60	0.7368	6.16	81	0.6635	5.55
19	0.9395	7.83	40	0.8235	6.87	61	0.7329	6.13	82	0.6604	5.51
20	0.9333	7.78	41	0.8187	6.83	62	0.7290	6.10	83	0.6573	5.48
21	0.9271	7.73	42	0.8139	6.80	63	0.7253	6.07	84	0.6542	5.45
22	0.9210	7.68	43	0.8092	6.76	64	0.7216	6.03	85	0.6511	5.42
23	0.9150	7.63	44	0.8045	6.72	65	0.7179	6.00	86	0.6481	5.40
24	0.9090	7.58	45	0.8000	6.68	66	0.7142	5.97	87	0.6451	5.38
25	0.9032	7.54	46	0.7954	6.64	67	0.7106	5.94	88	0.6422	5.36
26	0.8974	7.49	47	0.7909	6.60	68	0.7070	5.91	89	0.6392	5.33
27	0.8917	7.44	48	0.7865	6.57	69	0.7035	5.88	90	0.6363	5.30
28	0.8860	7.39	49	0.7821	6.53	70	0.7000	5.85	....	....	....
29	0.8805	7.34	50	0.7777	6.49	71	0.6965	5.82	....	....	....
30	0.8750	7.29	51	0.7734	6.46	72	0.6930	5.79	....	....	....

Anti-Freezing Mixtures

The percentage of alcohol, by volume, to give a certain freezing point can be obtained from the table below:

Freezing Point, Degrees Fahrenheit	DENATURED		WOOD	
	Alcohol, per Cent.	Water, per Cent.	Alcohol, per Cent.	Water, per Cent.
+10	28	72	17	83
0	40	60	24	76
-10	52	48	31	69
-20	63	37	38	62

So little water is lost by evaporation that it is only necessary to add alcohol to the system from time to time, to replace that which is used up.

The proportions of glycerine and water may be obtained from the table:

Freezing Point	Glycerine	Water
+28 degrees Fahrenheit	10 per cent.	90 per cent.
+15 degrees Fahrenheit	30 per cent.	70 per cent.
+ 5 degrees Fahrenheit	40 per cent.	50 per cent.
0 degrees Fahrenheit	48 per cent.	52 per cent.
- 5 degrees Fahrenheit	54 per cent.	46 per cent.
-10 degrees Fahrenheit	58 per cent.	42 per cent.

The difficulties in the way of using glycerine and water alone have led to the use of a mixture containing alcohol in addition. The alcohol and glycerine are generally added in equal parts to the water, the amount depending upon the freezing point desired. The percentage of mixture to add may be obtained from the accompanying table:

Freezing Point	Mixture Glycerine and Alcohol	Water
+20 degrees Fahrenheit	15 per cent.	85 per cent.
+15 degrees Fahrenheit	20 per cent.	80 per cent.
+10 degrees Fahrenheit	24 per cent.	76 per cent.
+ 5 degrees Fahrenheit	27 per cent.	73 per cent.
0 degrees Fahrenheit	29 per cent.	71 per cent.
- 5 degrees Fahrenheit	30 per cent.	70 per cent.
-15 degrees Fahrenheit	32 per cent.	68 per cent.

Calcium chloride in water is another solution that has been used with success. When purchasing calcium chloride it is very important to ask for the chemically pure salt as the commercial variety contains free acid which reacts on the metal parts of the cooling system. If it is impossible to obtain the former, the latter may be made fit for use by neutralizing the acid. To do this add ammonia or soda ash gradually to the calcium chloride solution until blue litmus paper no longer turns pink when moistened with the solution. The amount of calcium chloride to use may be found from the table:

Pounds of Calcium Chloride per Gallon	Freezing Point,
2	+18.0 Degrees Fahrenheit
3	+ 1.5 " "
4	-17.0 " "
5	-39.0 " "

Measurement of Grades

The base of the triangle represents a line 100 feet long and the sloping lines different road grades. The first grade has a rise of 5 feet and is designated as a 5 per cent grade or a 1 in 20 grade. The distance from which the percentage is figured is not that actually traveled by a car in ascending such a slope but is the length of the base line of the slope. This system of measuring a grade (by the tangent of the angle of inclination and not by its sine) has come from the surveyor's practice of measuring grades on maps that show base lines and altitudes but not the actual length or angle of an incline.

A grade of 100 percent, under this accepted system, corresponds to an angle of 45 degrees, and not to 90 degrees as commonly supposed.

At the upper end of the second sloping line the elevation amounts to 6½ feet from a 100-foot base, and the grade is a 6½ per cent or 1 in 15½ grade. Similarly, a 1 in 3 grade is the same as a 33⅓ per cent grade, a 1 in 2 grade the same as a 50 per cent grade.

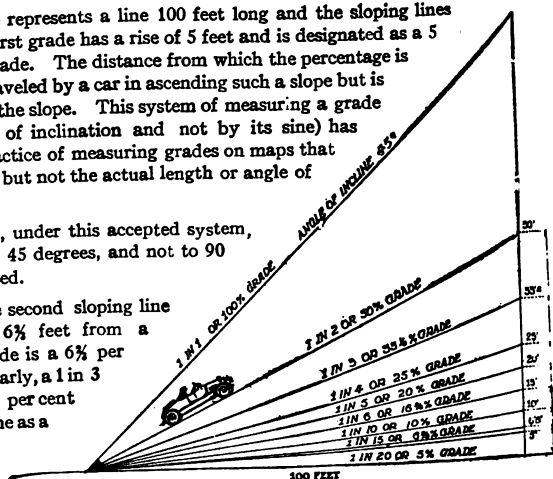


Table of Gradients

Slope	Percent Grade	Equal to Angle of	Rise or Fall in One Mile, Feet
1 " 5	20	11° 19'	1056
1 " 6	16.67	9° 26'	880
1 " 7	14.3	8° 09'	755
1 " 8	12.5	7° 08'	660
1 " 9	11.1	6° 17'	586
1 " 10	10	5° 43'	528
1 " 11	9.1	5° 11'	480
1 " 12	8.33	4° 46'	440
1 " 13	7.7	4° 24'	407
1 " 14	7.14	4° 05'	377
1 " 15	6.67	3° 49'	352
1 " 16	6.25	3° 35'	330
1 " 17	5.9	3° 22'	312
1 " 18	5.55	3° 11'	287
1 " 19	5.26	3° 00'	278
1 " 20	5	2° 52'	264
1 " 25	4	2° 18'	211
1 " 30	3.33	1° 55'	176
1 " 35	2.86	1° 38'	151
1 " 40	2.5	1° 26'	132

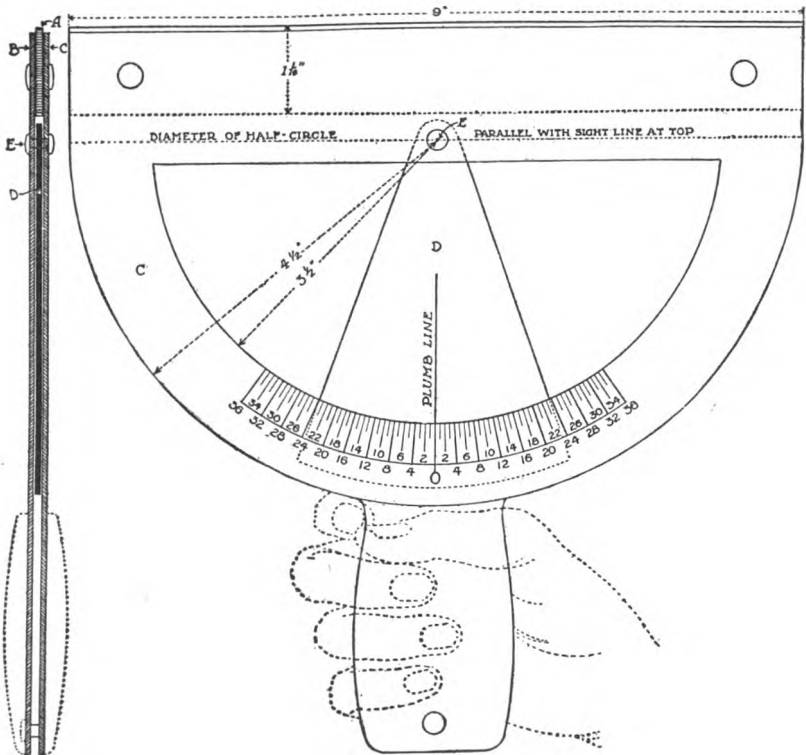
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Measuring Grades from a Car

Neither the rise nor the length of the base line of a hill can be ascertained without careful surveying, and in automobile practice (such as in reporting road conditions) it is therefore necessary to find the grade by first measuring the angle of inclination, and then looking up the grade corresponding to this angle in a table compiled for this purpose.

A simple instrument for measuring the angle can be made on the plan shown in the illustration, as proposed by M. C. Krarup. Two pieces, *B* and *C*, of the shape shown are cut out of sheet brass about $\frac{1}{8}$ inch thick. A segment is cut out of *C* in order to render visible the triangular pendulum *D* suspended on a pin *E* between the two pieces. The pendulum can be cut from the same material as *B* and *C* and is marked with a line that is perfectly perpendicular when the pendulum hangs freely. A dial is marked along the open arc on *C*. With the dimensions indicated, this dial can show degrees, and fractions of degrees can be estimated. *B* and *C* are spaced apart by a straight-rule *A* about 1" broad projecting $\frac{1}{4}$ inch above their upper edges, its own upper edge affording a sighting line. *A* is of slightly thicker material than the pendulum, so that the latter has room to swing freely. The handle-pieces are not more than 3 inches long and $1\frac{1}{4}$ inch broad, and a pin at their lower end spaces them apart when they are held loosely in the hand. Wood facings secured to these handle-pieces improve the device. On the back of *B* is pasted the Table of Grades and Corresponding Angles of Inclines on the following page.



In operating, one sights over the edge of *A*, bringing it in line with the top of the hill. *D* swings around an angle equal to the angle of inclination, and the mark on *D* points out this angle on the dial. In this position *D* is held by squeezing the handle a little, and the angle can be read with a turn of the hand. The grade corresponding to this angle can be read from the table pasted on the other side of the device with another turn of the hand.

As the instrument held in the hand is about five feet above the ground at the foot of the hill, the angle, as read, is a little too small. To correct this, one sights again from the top of the hill to the foot, which gives an angle a little too large. The mean of the two angles is the correct one. Also, one reading checks the other.

Table of Grades and Corresponding Angles of Inclines.

(Grade Percent Equals Numerical Value of Tangents of Angle with Radius 100)

Angle, Degrees	Grade, Percent	Angle, Degrees	Grade, Percent	Angle, Degrees	Grade, Percent
¼	0.87	12½	22.17	24½	45.57
1	1.74	13	23.09	25	46.63
1½	2.62	13½	24.01	25½	47.70
2	3.49	14	24.93	26	48.77
2½	4.37	14½	25.86	26½	49.86
3	5.24	15	26.80	27	50.95
3½	6.12	15½	27.73	27½	52.06
4	7.00	16	28.68	28	53.17
4½	7.87	16½	29.62	28½	54.30
5	8.75	17	30.57	29	55.43
5½	9.63	17½	31.53	29½	56.58
6	10.51	18	32.49	30	57.74
6½	11.39	18½	33.46	30½	58.91
7	12.28	19	34.43	31	60.09
7½	13.17	19½	35.41	31½	61.28
8	14.05	20	36.40	32	62.49
8½	14.95	20½	37.39	32½	63.71
9	15.84	21	38.39	33	64.94
9½	16.73	21½	39.39	33½	66.19
10	17.63	22	40.40	34	67.45
10½	18.53	22½	41.42	34½	68.73
11	19.44	23	42.45	35	70.02
11½	20.35	23½	43.48	35½	71.33
12	21.26	24	44.52	36	72.65

Carrying Capacities and Inflation Pressures of Pneumatic Tires
S. A. E. Standard

Nom- inal Tire Size	Fabric Tires for Passenger Cars		Cord Tires for Passenger Cars		Cord Tires for Motor Trucks	
	Maximum Load per Tire, Lb.	Air Pressure, Lb. per Sq. In.	Maximum Load per Tire, Lb.	Air Pressure, Lb. per Sq. In.	Maximum Load per Tire, Lb.	Air Pressure, Lb. per Sq. In.
3	375	45	400	40	....	....
3½	570	55	600	50	....	70
4	815	65	850	60	850	75
4½	1100	75	1200	70	1200	80
5	1500	85	1700	80	1700	90
6					2200	100
7					3000	110
8					4000	

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Types and Dimensions for Pneumatic Tires and Rims

(S. A. E. Standard as revised August, 1919)

Pneumatic Tires and Rims

S. A. E. Standard

Pneumatic tires for passenger cars and motor trucks shall be of the straight-side type in all sizes except the 30 by 3½-in. regular and 31 by 4-in. oversize, where only regular clincher type shall be used.

Nominal Tire and Rim Size		Oversize Tire Size		Tire-Seat Diam. (Rim)		Tire Seat Circum. (Rim) In. ± 0.046
In.	Mm.	In.	Mm.	In.	Mm.	
30x3½	90/585	31x4	105/585	23	585	72.257
32x3½	90/635	33x4	105/635	25	635	78.540
32x4	105/610	33x4½	120/610	24	610	75.398
33x4	105/635	34x4½	120/635	25	635	78.540
32x4½	120/585	33x5	135/585	23	585	72.257
33x4½	120/610	34x5	135/610	24	610	75.398
34x4½	120/635	35x5	135/635	25	635	78.540
34x5	135/610	36x6	150/610	24	610	75.398
36x6	150/610	38x7	175/610	24	610	75.398
38x7	175/610	40x8	200/610	24	610	75.398
40x8	200/610	42x9	225/610	24	610	75.398
44x10	250/610	.....	.....	24	610	75.398

Deflection and Set Test for Pneumatic Tire Rims

S. A. E. Standard

Deflection measurements for either clincher or straight-side rims shall be made across the extreme rim width. Water pressure shall be used.

The deflection shall be measured from a fixed inflation of 25 lb. per sq. in. for 3½, 4 and 4½ in. sections, and 50 lb. per sq. in. for 5-in. and larger sections up to the predetermined maximum pressures.

In conducting the tests, measurements of the deflection shall be made after load increments of 25 or 50 lb. as above are added and at a corresponding set the load shall be released.

(Continued on following page)

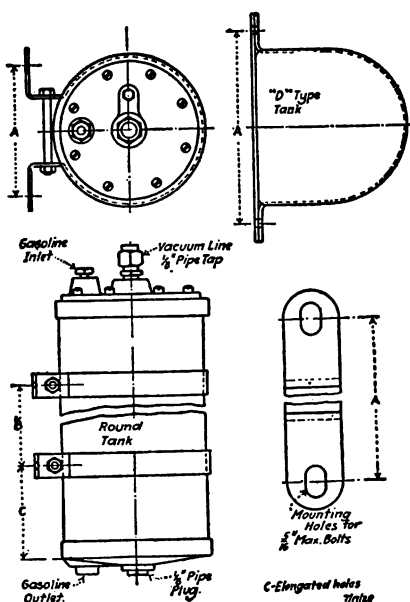
Deflection and Set Test

Test Pressures and Deflections

Rim Size Nominal, In.	Maximum Pressure Lb. Per Sq. In.	Maximum Deflection, In.	Total Permanent Set, In.
3½	140	0.06	0.02
4	160	0.07	0.03
4½	180	0.10	0.06
5	190	0.12	0.06
6	200	0.15	0.06
7	225	0.15	0.06
8	250	0.15	0.06
10	250	0.15	0.06

Fuel Vacuum Tank Mountings

S. A. E. Standard



Tank Diam., In.	Inlet*	Outlet*	A	B	C
3¾ and 4½	⅛	⅛	4	4	2½
6	⅛	¼	4	4	2½
"D" type	¼	¼	7¼	4	2½

* Pipe-line connections and plugs are American standard taper pipe threads.
All dimensions are in inches.

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Standardized Dimensions for Solid Tires

(S. A. E. Standard as revised by the Truck Standards Division March 1916 and by the Tire and Rim Division March, 1920.)

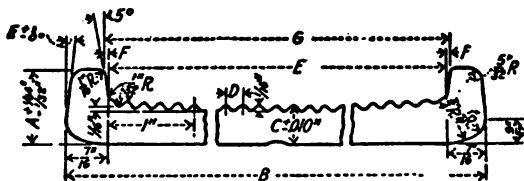
The standard nominal solid tire diameters are 34, 36 and 40 in.

Diameters and Wheel Circumferences

NOMINAL OUTER DIAMETER OF TIRES		ACTUAL DIAMETER OVER STEEL BAND		ACTUAL CIRCUMFERENCE OVER STEEL BAND	
in.	mm	in.	mm	in.	mm
34	860	28	711.2	87 $\frac{3}{4}$	2234.3
36	910	30	762.0	94 $\frac{1}{4}$	2393.9
40	1010	34	863.6	106 $\frac{1}{8}$	2713.1

Solid Tire Base Bands

(S. A. E. Standard as revised by the Tire and Rim Division August, 1919)



Base Band Size	A	B	Tolerances of B	C	Corrugations*		E	G	F
					No.	D			
3	2 $\frac{3}{8}$	3 $\frac{3}{4}$	$\pm \frac{1}{32}$	$\frac{6}{10}$	16	0.181	2 $\frac{29}{32}$	3 $\frac{1}{10}$	$\frac{5}{64}$
3 $\frac{1}{2}$ †	$\frac{5}{8}$	4 $\frac{1}{4}$	$\pm \frac{1}{32}$	1 $\frac{1}{8}$	18	0.191	3 $\frac{1}{16}$	3 $\frac{3}{10}$	$\frac{1}{16}$
4	2 $\frac{5}{8}$	4 $\frac{13}{16}$	$\pm \frac{1}{32}$	$\frac{9}{16}$	20	0.196	3 $\frac{59}{64}$	4 $\frac{1}{16}$	$\frac{9}{128}$
5†	2 $\frac{7}{8}$	5 $\frac{1}{8}$	$\pm \frac{1}{32}$	$\frac{7}{16}$	26	0.189	4 $\frac{59}{64}$	5 $\frac{1}{16}$	$\frac{9}{128}$
6	2 $\frac{7}{8}$	6 $\frac{1}{8}$	$\pm \frac{1}{32}$	$\frac{7}{16}$	32	0.185	5 $\frac{59}{64}$	6 $\frac{1}{10}$	$\frac{9}{128}$
7	2 $\frac{7}{8}$	7 $\frac{1}{8}$	$\pm \frac{1}{32}$	$\frac{7}{16}$	36	0.192	6 $\frac{59}{64}$	7 $\frac{1}{16}$	$\frac{9}{128}$
8	$\frac{7}{8}$	8 $\frac{1}{8}$	$\pm \frac{3}{64}$	$\frac{7}{16}$	40	0.196	7 $\frac{27}{32}$	8	$\frac{5}{64}$
10	$\frac{7}{8}$	10 $\frac{1}{8}$	$\pm \frac{3}{64}$	$\frac{7}{16}$	50	0.196	9 $\frac{27}{32}$	10	$\frac{5}{64}$
12	$\frac{7}{8}$	12 $\frac{1}{8}$	$\pm \frac{3}{64}$	$\frac{7}{16}$	60	0.197	11 $\frac{27}{32}$	12	$\frac{5}{64}$
14	$\frac{7}{8}$	14 $\frac{1}{8}$	$\pm \frac{3}{64}$	$\frac{7}{16}$	70	0.197	13 $\frac{27}{32}$	14	$\frac{5}{64}$

*Either mill corrugated or dovetail facings may be used.

†Only the 3 $\frac{1}{2}$ and 5-in. base bands shall be used for industrial trucks and tractors.

The standard width of solid tires is the nominal width in inches as measured inside the channel at the mean of the vertical seat of rubber, the tolerance being plus or minus $\frac{1}{16}$ in.

Felloe Bands

(S. A. E. Standard as revised by the Tire and Rim Division August, 1920.)

All edges of felloe bands and so far as pertinent metal wheel felloes shall have a radius not exceeding $\frac{3}{32}$ in. (2.38 mm.)

In measuring circumference of band, if there is not an allowance on the tapeline itself, a correction amounting to three times the thickness of the tapeline should be made.
(Continued on following page)

Allowable Tolerance in Felloe Bands

	Plus		Minus	
	in.	mm	in.	mm
Band circumf. before application	0	0	1/16	1.69
Band circumf. after application	1/16	1.59	1/32	0.79
Width of band	1/32	0.79	1/32	0.79
Thickness of band	0.006	0.15	0.006	0.15
Radius of band after application	1/16	1.59	1/16	1.59

Approximate Wood Wheel Diameters for Various Sizes and Types of Rims

Size Tire	Clincher and Quick Detachable Rims, Inches	Firestone Demountable Rims, Inches	Fisk Bolted on Rims, Inches	Fisk Demountable Rims, Inches	Stanweld No. 60 Demountable Rims, Inches	Stanweld No. 40 Demountable Rims, Inches	Continental and One Piece Transversely Split Demountable Rims, Inches	CONTINENTAL DEMOUNTABLE RIMS, METRIC SIZES	
								Size Tire	Wheel Dia., Inches
30x3 1/2	22 1/16	21 1/16	21 1/16	20 1/16	21 1/16	21 1/16	22	.....	.....
32x3 1/2	24 1/16	23 1/16	23 1/16	22 1/16	23 1/16	23 1/16	24	810x 90	23 1/2
34x3 1/2	26 1/16	25 1/16	25 1/16	24 1/16	25 1/16	25 1/16	26	870x 90	25 1/2
36x3 1/2	28 1/16	27 1/16	27 1/16	26 1/16	27 1/16	27 1/16	28	910x 90	27 1/2
30x4	21 1/16	.....	.....	.....	20 1/16	20 1/16	21	.....	.....
32x4	23 1/16	22 1/16	22 1/16	21 1/16	22 1/16	22 1/16	23	.....	.....
34x4	25 1/16	24 1/16	24 1/16	23 1/16	24 1/16	24 1/16	25	875x105	25 1/2
36x4	27 1/16	26 1/16	26 1/16	25 1/16	26 1/16	26 1/16	27	915x105	27 1/2
32x4 1/2	22 1/16	21 1/16	.....	.....	21 1/16	21 1/16	.....	820x120	21 1/2
34x4 1/2	24 1/16	23 1/16	23 1/16	22 1/16	23 1/16	23 1/16	24 1/16	880x120	23 1/2
36x4 1/2	26 1/16	25 1/16	25 1/16	24 1/16	25 1/16	25 1/16	26 1/16	920x120	25 1/2
34x5	23 1/16	22 1/16	22 1/16	21 1/16	22 1/16	22 1/16	23 1/16	.....	.....
36x5	25 1/16	24 1/16	24 1/16	23 1/16	24 1/16	24 1/16	25 1/16	.....	.....
38x5	.....	.....	26 1/16	25 1/16	.....	.....	.....	.....	.....
40x5	.....	.....	28 1/16	27 1/16	.....	.....	.....	.....	.....
36x5 1/2	24 1/16	23 1/16	.....	.....	23 1/16	23 1/16	.....	935x135	24 1/2
37x5 1/2	25 1/16	24 1/16	.....	.....	25 1/16	24 1/16	24 1/16	.....	.....
38x5 1/2	.....	.....	25 1/16	23 1/16	.....	.....	.....	.....	.....
40x5 1/2	.....	.....	27 1/16	25 1/16	.....	.....	.....	.....	.....
40x6	.....	.....	25 1/16	24 1/16	.....	.....	.....	.....	.....

Metric Tires and Their American Equivalents

Metric Sizes	Approximate Size in Inches	Metric Sizes	Approximate Size in Inches
650 x 65	26 x 2 1/2	870 x 90	34 x 3 1/2
700 x 65	28 x 2 1/2	910 x 90	36 x 3 1/2
750 x 65	30 x 2 1/2	960 x 90	38 x 3 1/2
800 x 65	32 x 2 1/2	1010 x 90	40 x 3 1/2
830 x 65	33 x 2 1/2	815 x 105	32 x 4
860 x 65	34 x 2 1/2	875 x 105	34 x 4
700 x 85	28 x 3 1/2	915 x 105	36 x 4
750 x 85	30 x 3 1/2	820 x 120	32 x 4 1/2
800 x 85	32 x 3 1/2	850 x 120	33 x 4 1/2
860 x 85	34 x 3 1/2	880 x 120	34 x 4 1/2
760 x 90	30 x 3 1/2	920 x 120	36 x 4 1/2
810 x 90	32 x 3 1/2	1020 x 120	40 x 4 1/2
840 x 90	32 x 3 1/2	1080 x 120	42 x 4 1/2

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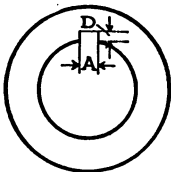
Width and Depth of Piston Ring Grooves

A formula developed from approved practice with iron or steel cylinders and pistons has

$$G = \sqrt{\frac{0.01 D^3}{8}} + 0.005$$

in which G is the depth of the piston ring groove and D the nominal diameter of the piston in inches. It is applicable for diameters from 1 to 7 inches and for concentric as well as eccentric rings. The width of rings and grooves can be standardized in five dimensions, as given in the appended table. As diameter H of groove bottom plus $2G$ equals actual piston diameter, piston clearance = $\frac{D - (2G + H)}{2}$

Diameter (D)	Depth (G)	Max'm Diameter H of Groove Bottom (Minus Tolerance 0.005)	Minimum Groove Width (Plus Tolerance 0.001)	Maximum Ring Width (Minus Tolerance 0.001)
1	.0791	.840	.1250	.1247
1½	.0811	.961	"	"
1¾	.0834	1.081	"	"
1½	.0858	1.201	"	"
1¾	.0884	1.321	"	"
1½	.0911	1.440	"	"
1¾	.0939	1.559	"	"
1½	.0969	1.678	"	"
2	.1000	1.796	"	"
2¼	.1032	1.915	"	"
2½	.1064	2.035	"	"
2¾	.1098	2.151	"	"
2½	.1132	2.269	"	"
2¾	.1167	2.387	.1875	.1872
2½	.1202	2.505	"	"
2¾	.1238	2.622	"	"
3	.1275	2.739	"	"
3¼	.1312	2.857	"	"
3½	.1349	2.974	"	"
3¾	.1387	3.091	"	"
3½	.1425	3.208	"	"
3¾	.1464	3.325	"	"
3½	.1503	3.442	"	"
3¾	.1542	3.559	"	"
4	.1581	3.676	"	"
4¼	.1621	3.793	.2500	.2497
4½	.1661	3.910	"	"
4¾	.1701	4.027	"	"
4½	.1741	4.143	"	"
4¾	.1782	4.260	"	"
4½	.1822	4.377	"	"
4¾	.1863	4.493	"	"
5	.1904	4.610	"	"
5¼	.1945	4.726	.3125	.3120
5½	.1986	4.843	"	"
5¾	.2028	4.959	"	"
5½	.2069	5.076	"	"
5¾	.2111	5.182	"	"
5½	.2152	5.309	"	"
5¾	.2194	5.425	"	"
6	.2236	5.541	"	"
6¼	.2278	5.658	.3750	.3745
6½	.2320	5.774	"	"
6¾	.2362	5.890	"	"
6½	.2404	6.007	"	"
6¾	.2447	6.123	"	"
6½	.2489	6.239	"	"
6¾	.2531	6.356	"	"
7	.2574	6.472	"	"



Data for Keyseats and Keyways

(American Machine)

Standard Sizes of Keyseats

For straight keys, height of keyseat throughout = D .

For feather keys, $D = \frac{1}{2}A$.

Keyseat in shaft same depth as D in small end.

Standard taper = $\frac{1}{8}$ inch per foot.

Size of Bore, Inches	"A." Width, Inches	"D." Smallest Height, Inches	Size of Bore, Inches	"A." Width, Inches	"D." Smallest Height, Inches
1 to $1\frac{1}{8}$	$\frac{1}{2}$	$\frac{3}{8}$	$2\frac{1}{8}$ to $2\frac{3}{8}$	$1\frac{1}{8}$	$\frac{1}{2}$
$1\frac{1}{8}$ to $1\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{16}$	$2\frac{3}{8}$ to $3\frac{1}{8}$	$\frac{3}{4}$	$\frac{1}{2}$
$1\frac{1}{4}$ to $1\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{4}$	$3\frac{1}{8}$ to $3\frac{3}{8}$	$1\frac{1}{4}$	$\frac{1}{2}$
$1\frac{3}{8}$ to $1\frac{1}{2}$	$\frac{7}{16}$	$\frac{3}{8}$	$3\frac{3}{8}$ to $3\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$
$1\frac{1}{2}$ to $2\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$3\frac{1}{2}$ to $3\frac{3}{4}$	$1\frac{3}{8}$	$\frac{1}{2}$
$2\frac{1}{8}$ to $2\frac{1}{4}$	$\frac{5}{8}$	$\frac{3}{4}$	$3\frac{3}{4}$ to $4\frac{1}{8}$	1	$\frac{1}{2}$
$2\frac{1}{4}$ to $2\frac{3}{8}$	$\frac{3}{4}$	$1\frac{1}{8}$	$4\frac{1}{8}$ to $4\frac{3}{8}$	$1\frac{1}{8}$	$\frac{1}{2}$

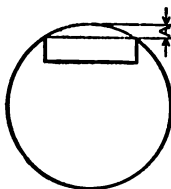


Table for Total Keyway Depth

This table will be found very useful in feeding the milling cutter down into a shaft. Having the size of the shaft to be keywayed, look down the column marked "Size of Shaft" until you come to the number representing that size; then follow this line to the right until you reach the column representing the size keyway, and the decimal there represented is the distance "A," which added to the depth of the keyway will give the total depth from the point where the cutter first begins to cut.

Size of Shaft, Inches	WIDTH OF KEYWAY IN INCHES				
	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$
	"A" IN INCHES				
$\frac{1}{8}$	0.0325				
$\frac{1}{16}$	0.0289				
$\frac{1}{4}$	0.0254	0.0413			
$1\frac{1}{16}$	0.0236	0.0379			
$\frac{3}{8}$	0.0220	0.0346	0.0511		
$1\frac{1}{8}$	0.0198	0.0314	0.0465		
$\frac{1}{2}$	0.0177	0.0283	0.0420	0.0583	
$1\frac{1}{4}$	0.0164	0.0264	0.0392	0.0544	
1	0.0152	0.0246	0.0365	0.0506	0.0670
$1\frac{1}{8}$	0.0143	0.0228	0.0342	0.0476	0.0625
$1\frac{1}{4}$	0.0136	0.0210	0.0319	0.0446	0.0581
$1\frac{3}{8}$	0.0131	0.0204	0.0304	0.0441	0.0551
$1\frac{1}{2}$	0.0127	0.0198	0.0290	0.0397	0.0522
$1\frac{5}{8}$	0.0123	0.0191	0.0279	0.0380	0.0499
$1\frac{3}{4}$	0.0120	0.0185	0.0268	0.0364	0.0477
$1\frac{7}{8}$	0.0114	0.0174	0.0254	0.0346	0.0453
$1\frac{1}{2}$	0.0110	0.0164	0.0240	0.0328	0.0429
$1\frac{1}{4}$	0.0107	0.0158	0.0231	0.0309	0.0412
$1\frac{3}{8}$	0.0105	0.0153	0.0221	0.0291	0.0395
$1\frac{1}{2}$	0.0102	0.0147	0.0214	0.0282	0.0383
$1\frac{1}{4}$	0.0099	0.0142	0.0207	0.0274	0.0371
$1\frac{1}{8}$	0.0095	0.0136	0.0198	0.0265	0.0355
$1\frac{1}{4}$	0.0093	0.0130	0.0190	0.0257	0.0339
$1\frac{1}{8}$	0.0090	0.0127	0.0184	0.0250	0.0328
2	0.0088	0.0124	0.0179	0.0243	0.0317
$2\frac{1}{8}$	0.0078	0.0111	0.0168	0.0229	0.0299
$2\frac{1}{4}$	0.0070	0.0107	0.0159	0.0216	0.0282
$2\frac{3}{8}$	0.0066	0.0102	0.0152	0.0202	0.0267
$2\frac{1}{2}$	0.0063	0.0098	0.0146	0.0194	0.0255
$2\frac{3}{4}$	0.0060	0.0090	0.0139	0.0185	0.0245
$2\frac{1}{2}$	0.0058	0.0088	0.0133	0.0176	0.0235
$2\frac{3}{4}$	0.0056	0.0084	0.0126	0.0168	0.0225
3	0.0053	0.0081	0.0119	0.0161	0.0215

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Brakes and Clutches

Designs for brakes and clutches for motor vehicles have been developed empirically, and the development of brakes continues to be carried on without close reference to the mathematical formulas for retardation of a moving mass. The maintenance of constant conditions in the braking organs, especially a constant co-efficient of friction, and the suitable disposal of the heat generated by braking efforts, especially on long declivities, constitute the points on which difficulties are still mostly experienced. In European motor trucks, friction brakes are usually designed with metal to metal contact, this giving harsh action but improved (though not yet sufficient) heat convection. In American-built vehicles, the friction surfaces are usually metal and fabric, and the properties of the latter under all actual conditions of vehicle operation are the most important factor, assuming that conventional types and dimensions are employed.

Conclusive data on brake and clutch facings have not as yet been compiled or received the sanction of authorities.

Formulas for Cone Clutches (C. A. Schaefer)

H.P. = horse-power transmitted.

N = revolutions of crank-shaft per minute.

r = mean radius of friction cone, in inches.

r_1 = large radius of friction cone, in inches.

r_2 = small radius of friction cone, in inches.

R_1 = outside radius of leather band, in inches.

R_2 = inside radius of leather band, in inches.

v = velocity of a point at distance r from the center, in feet per minute.

F = tangential force acting at radius r , in pounds.

P_n = total normal pressure between cone surfaces, in pounds.

P_s = spring pressure, in pounds.

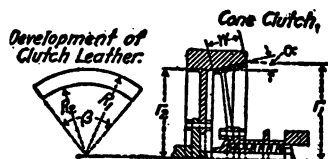
α = angle of clutch surface with axis of shaft = 7 to 13 degrees.

β = included angle of clutch leather, when developed, in degrees.

f = coefficient of friction = 0.20 to 0.25 for greasy leather on iron.

p = allowable pressure per square inch of leather band = 1 to 8 pounds.

W = width of clutch leather, in inches.



$$R_1 = \frac{r_1}{\sin \alpha}$$

$$H.P. = \frac{P_n f r N}{63025}$$

$$R_2 = \frac{r_2}{\sin \alpha}$$

Engagement with some slip:

$$\beta = \sin \alpha \times 360 \quad P_n = \frac{P_s}{\sin \alpha}$$

$$r = \frac{r_1 \times r_2}{2} \quad P_s = \frac{H.P. \times 63025 \sin \alpha}{f r N}$$

$$v = \frac{2\pi r N}{12} \quad \text{Engagement without slip:}$$

$$F = \frac{H.P. \times 33000}{v} \quad P_n = \frac{P_s}{\sin \alpha + f \cos \alpha}$$

$$W = \frac{P_n}{2 \pi r p}$$

$$P_s = \frac{H.P. \times 63025 (\sin \alpha + f \cos \alpha)}{f r N}$$

Multiple Disc Clutches

While multiple disk clutches are designed and dimensioned mainly under the guidance of experience, acceleration formulas are used for checking the designs in each case.

A formula for clutch capacity which is employed for this purpose is the following:

$$Hp = \frac{PfSRN}{63.025}$$

in which P is spring pressure, f co-efficient of friction, S number of friction surfaces, R mean radius of friction ring in inches and N maximum revolutions per minute of crank-shaft.

It is found that this formula agrees well with experience if the value for f is taken as 12 to 15 per cent for asbestos woven clutch facings.

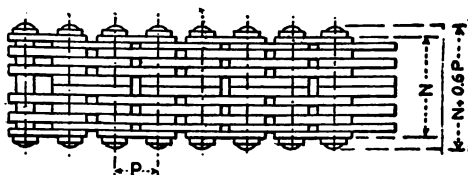
The torque which can be applied through a multiple disk clutch with V-grooves in the disks is determined by the formula:

$$T \text{ (in pounds-inches)} = rPf(N-1)C$$

in which r is the radius in inches of the V-groove, P the spring pressure, f equals 0.1 co-efficient of friction, N is the total number of disks and C a constant, which is 3.5 for automobile clutches and 2.5 for aeroplane clutches. The former have V-grooves of a 35-deg. angle, the latter of 45-deg. angle.

Widths of Silent Chains

According to recommended practice, the standard width of a silent chain is the width over all tension members and the maximum width of chain over rivet heads is this nominal width plus six-tenths the pitch. The table shows the extreme widths for the various pitches. Width of sprocket for the same nominal width of chain will vary according to the method of guiding the chain.



Chain Width To.	(N) Width Over Tension Members	EXTREME WIDTH OF CHAIN (N+0.6P)							
		$\frac{3}{8}$ -In. Pitch	$\frac{1}{2}$ -In. Pitch	$\frac{5}{8}$ -In. Pitch	$\frac{3}{4}$ -In. Pitch	1-In. Pitch	$1\frac{1}{4}$ -In. Pitch	$1\frac{3}{4}$ -In. Pitch	2-In. Pitch
4	$\frac{1}{2}$	0.725	0.800	0.875	.....	.....	.....	.....	.....
6	$\frac{3}{4}$	0.975	1.050	1.125	1.200	.....	.....	.....	.....
8	1	1.225	1.300	1.375	1.450	1.600	.....	.....	.....
10	$1\frac{1}{4}$	1.475	1.550	1.625	1.700	1.850	2.000	.....	.....
12	$1\frac{1}{2}$	1.725	1.800	1.875	1.950	2.100	2.250	2.400	.....
14	$1\frac{3}{4}$	1.975	2.050	2.125	2.200	2.350	2.500	2.650	.....
16	2	2.225	2.300	2.375	2.450	2.600	2.750	2.900	3.200
18	$2\frac{1}{4}$	2.475	2.550	2.625	2.700	2.850	3.000	3.150	3.450
20	$2\frac{1}{2}$	2.725	2.800	2.875	2.950	3.100	3.250	3.400	3.700
24	3	3.225	3.300	3.375	3.450	3.600	3.750	3.900	4.200
28	$3\frac{1}{2}$	.....	3.800	3.875	3.950	4.100	4.250	4.400	4.700
32	4	.....	4.300	4.375	4.450	4.600	4.750	4.900	5.200
40	5			5.375	5.450	5.600	5.750	5.900	6.200
48	6			6.375	6.450	6.600	6.750	6.900	7.200

D & B Silent Timing Gears

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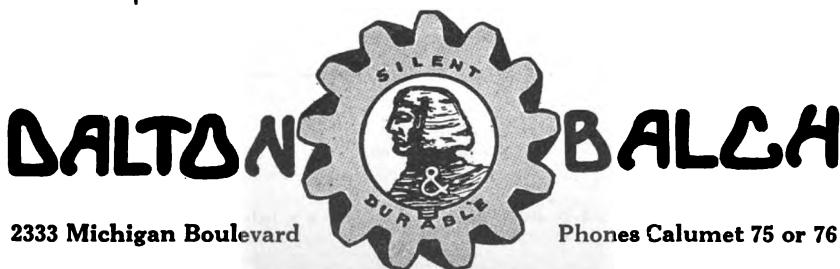
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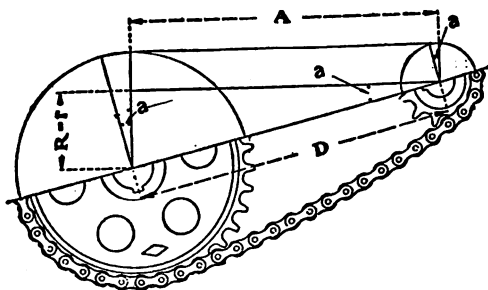
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Length of Sprocket Chains



D = Distance between centers.

A = Distance between limits of contact.

R = Pitch radius of large sprocket.

r = Pitch radius of small sprocket.

N = Number of teeth on large sprocket.

n = Number of teeth on small sprocket.

P = Pitch of chain and sprockets. (Distance from center to center of chain pins.)

$180^\circ + 2\alpha$ = Angle of contact—large sprocket.

$180^\circ - 2\alpha$ = Angle of contact—small sprocket.

$$\sin \alpha = \frac{R - r}{D}$$

$$A = D \cos \alpha$$

Length of chain = L

$$(1) \quad L = \frac{(90 + \alpha) NP}{180} + \frac{(90 - \alpha) nP}{180} + 2A$$

With only R , r and D known, the length of a sprocket chain can be figured with sufficient accuracy (very slightly short) from the formula.

$$(2) \quad L = (R + r) \pi + 2 \sqrt{D^2 - (R - r)^2} + \frac{2(R - r)^2}{D}$$

which is simple when figures are inserted.

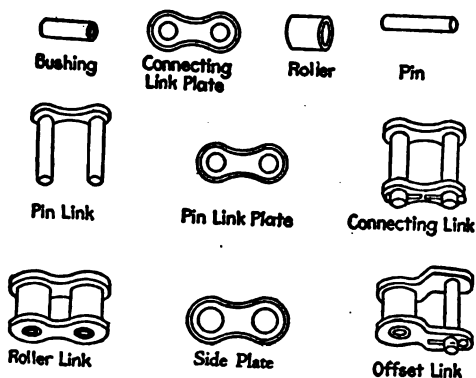
For example, with $R = 6$, $r = 2$ and $D = 20$,

$$L = 8 \times 3.1416 + 2 \sqrt{400 - 16} + \frac{32}{20} = 25.133 + 2 \times 19.60 + 1.60 = 65.93$$

The figure obtained is rounded upward to allow for slack and to correspond to a multiple of chain pitch.

Nomenclature and Dimensions of Roller-Chains

Recommended by S. A. E. and A. S. M.



Side Plate, or Inside Plate, for factory use only.

Heavy Series Dimensions

Pitch	Roller Diameter	Pin Diameter	Thickness of Inside Plates	Chain Width Min. (W)	Measuring Load, Lb.	Approx. Test Load, Lb.
$\frac{3}{8}$	0.250	0.125	0.050	0.250	14	464
$\frac{1}{2}$	0.3125	0.156	0.060	0.3125	25	825
$\frac{5}{8}$	0.400	0.200	0.080	0.375	39	1280
$\frac{3}{4}$	0.469	0.234	0.094	0.500	56	1850
1	0.625	0.3125	0.125	0.625	100	3300
$1\frac{1}{4}$	0.750	0.375	0.156	0.750	156	5150
$1\frac{1}{2}$	0.875	0.4375	0.1875	1.000	225	7430
$1\frac{3}{4}$	1.000	0.500	0.220	1.125	325	10700
2	1.125	0.5625	0.250	1.250	400	13200
$2\frac{1}{2}$	1.550	0.781	0.3125	1.5625	625	20600
3	1.900	0.9375	0.375	1.875	900	29700
4	2.500	1.250	0.500	2.500	1600	52800
5	3.000	1.500	0.625	3.000	2500	82500

Light Series—The light series of roller chains for any given pitch shall use the roller, bushing and pin dimensions for the second shorter pitch of the heavy series.

Medium Series—The medium series of roller chains for any given pitch shall use the roller, bushing and pin dimensions for the next shorter pitch of the heavy series.

TABLES AND DATA

Fan Belts and Pulleys
S. A. E. Standard Widths

Belt Width, In. + 1/32, — 1/32	Pulley Width, In. + .005, — .005
3/4	0.875
1	1.125
1 1/4	1.375
1 1/2	1.685

Brake Lining
S. A. E. Standard
Standard Sizes Only

Thickness, In.					
	5/32	3/16	1/4	5/16	3/8
Width, In. + 1/16 — 1/16	1 1/8 1 1/4 1 1/2 1 3/4 2 2 1/4	1 1/2 1 3/4 2 2 1/4 2 1/2	1 3/4 2 2 1/4 2 1/2 2 3/4 3	2 1/4 2 1/2 2 3/4 3 3 1/4 4	2 3/4 3 3 1/4 4 4 1/4
Tolerances, In.	+ .000 — .020	+ .000 — .020	+ .000 — .1/32	+ .000 — .1/32	+ .000 — .1/32

Non-Ferrous Metal Tubing Tolerances

Tubing can be furnished in copper, and the commercial alloys of copper and zinc, such as high brass, bronze, phosphor bronze, and tobin bronze.

Composition.—As specified to meet the requirements of use.

Temper.—As specified in the order; may be hard, half hard or annealed. If annealed, tubing may be soft, or light annealed.

Size variation.—On inside and outside diameter and the thickness of the walls, as follows:

Outside and Inside Dimensions

Up to 1/2 in. inclusive.....	0.002 in. over or under
Over 1/2 in. to and including 3/4 in.....	0.0025 in. over or under
Over 3/4 in. to and including 1 in.....	0.003 in. over or under
Over 1 in. to and including 1 1/4 in.....	0.0035 in. over or under
Over 1 1/4 in. to and including 1 1/2 in.....	0.004 in. over or under
Over 1 1/2 in. to and including 1 3/4 in.....	0.0045 in. over or under
Over 1 3/4 in. to and including 2 in.....	0.005 in. over or under
Over 2 in.	1/4 of 1 per cent. over or under

No combination of variations on the same tube shall make the thickness of the wall vary from the nominal by more than the following amounts:

Thickness of Wall

Up to and including 1/64 in.....	0.001 in. over or under
Over 1/64 in. to and including 1/32 in.....	0.002 in. over or under
Over 1/32 in. to and including 1/16 in.....	0.003 in. over or under
Over 1/16 in. to and including 1/8 in.....	0.005 in. over or under
Over 1/8 in. to and including 1/4 in.....	0.008 in. over or under
Over 1/4 in. to and including 5/16 in.....	0.0125 in. over or under
Over 5/16 in. to and including 3/8 in.....	0.015 in. over or under

Special limits.—On all stock where the above commercial variations are not permissible limits shall be specified in the order.

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Stock Sizes of Seamless Steel Tubes

(S. A. E. STANDARD)

AND THEIR TORQUE CAPACITIES IN POUNDS-FEET, AS FIGURED BY
C. W. SPICER

Out. Dia., In.	TUBE THICKNESS													Solid Shaft	
	BIRMINGHAM WIRE GAGE AND FRACTIONS IN UPPER LINE; DECIMALS OF AN INCH LOWER LINE														
	20	18	16	13	11	10	$\frac{9}{16}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{3}{16}$	$\frac{1}{8}$		
	.035	.049	.065	.095	.120	.134	.156	.188	.250	.313	.375	.500	.625		
$\frac{1}{8}$	9.28	11.9	14.3	17.5										20.7	
$\frac{1}{4}$	15.2	19.7	24.1	30.5										40.3	
$\frac{3}{8}$	22.3	29.3	36.7	47.3	54.2	57.1	60.8	64.6						69.7	
$\frac{1}{2}$	30.9	41.6	52.1	68.4	79.3	84.3	90.9	97.9						110.0	
$\frac{5}{8}$	41.3	55.6	70.2	93.5	109.0	117.0	127.0	139.0	154.0					165.0	
$\frac{3}{4}$	52.5	71.2	90.4	122.0	144.0	154.5	169.6	187.5	211.0					235.0	
$1\frac{1}{4}$	66.3	89.2	114.0	154.8	184.0	198.5	219.0	244.0	279.0	300.0	312.0			323.0	
$1\frac{1}{2}$	79.9	108.6	139.5	191.2	228.0	247.0	273.0	309.0	356.0	388.0	408.0			429.0	
$1\frac{3}{4}$	96.2	131.0	168.5	232.0	280.0	301.0	336.0	378.0	444.0	489.0	518.0	546.0		558.0	
$2\frac{1}{4}$			234.0	325.0	391.0	427.0	479.0	545.0	650.0	729.0	785.0	850.0		885.0	
$2\frac{1}{2}$			312.0	435.0	525.0	574.0	645.0	740.0	897.0	1020	1112	1,230	1,286	1,320	
$2\frac{3}{4}$			393.0	554.0	678.0	743.0	838.0	970.0	1181	1356	1497	1,687	1,792	1,880	
$3\frac{1}{4}$			492.0	689.0	885.0	938.0	1062	1226	1516	1751	1948	2,228	2,398	2,580	
$3\frac{1}{2}$			608.0	853.0	1044	1151	1312	1515	1885	2195	2458	2,853	3,106	3,435	
$3\frac{3}{4}$			722.0	1022	1257	1383	1580	1831	2296	2690	3030	3,554	3,918	4,460	
$4\frac{1}{4}$			847.5	1206	1488	1630	1877	2180	2740	3250	3659	4,336	4,820	5,680	
$4\frac{3}{4}$			937.0	1406	1734	1910	2202	2577	3233	3842	4360	5,200	5,855	7,085	

Sizes to the left of the left-hand zigzag line are difficult to straighten except with special equipment and are considered too flimsy for automobile propeller-shafts. Sizes to the right of the right-hand zigzag line are more than half as heavy as solid shafts of the same outside diameters.

Steel Bands and Strips

Steel bands, band edged flats and hoops or strips are rolled in the following widths and gages (all measurements in inches):

	Width	Thickness	
		No. 4	No. 18
$\frac{1}{8}$ increasing by $\frac{1}{16}$ ths to	$\frac{1}{8}$	-.238	-.049
$1\frac{1}{8}$ " " " "	$\frac{1}{4}$	-.238	-.042
$2\frac{1}{8}$ " " " "	$\frac{3}{8}$	-.238	-.025
$3\frac{1}{8}$ " " " "	$\frac{1}{2}$	-.300	-.028
$4\frac{1}{8}$ " " " "	$\frac{3}{4}$	-.300	-.032
$5\frac{1}{8}$ " " " "	$\frac{7}{8}$	-.300	-.035
$6\frac{1}{8}$ " " " "	$1\frac{1}{8}$	-.300	-.042
$7\frac{1}{8}$ " " " "	$1\frac{1}{4}$	-.380	-.049
$8\frac{1}{8}$ " " " "	$1\frac{3}{8}$	-.380	-.058
$9\frac{1}{8}$ " " " "	$1\frac{1}{2}$	-.380	-.065
$10\frac{1}{8}$ " " " "	$1\frac{5}{8}$	-.300	-.083
$11\frac{1}{8}$ " " " "	$1\frac{7}{8}$	-.300	-.083
$12\frac{1}{8}$ " " " "	$2\frac{1}{8}$	-.300	-.083
$13\frac{1}{8}$ " " " "	$2\frac{1}{4}$	-.300	-.083
$14\frac{1}{8}$ " " " "	$2\frac{3}{8}$	-.300	-.083
$15\frac{1}{8}$ " " " "	$2\frac{1}{2}$	-.300	-.083
$16\frac{1}{8}$ " " " "	$2\frac{5}{8}$	-.300	-.083
$17\frac{1}{8}$ " " " "	$2\frac{3}{4}$	-.300	-.083
$18\frac{1}{8}$ " " " "	$2\frac{7}{8}$	-.300	-.083
$19\frac{1}{8}$ " " " "	$3\frac{1}{8}$	-.300	-.083
$20\frac{1}{8}$ " " " "	$3\frac{1}{4}$	-.300	-.083
$21\frac{1}{8}$ " " " "	$3\frac{3}{8}$	-.300	-.083
$22\frac{1}{8}$ " " " "	$3\frac{1}{2}$	-.300	-.083
$23\frac{1}{8}$ " " " "	$3\frac{5}{8}$	-.300	-.083
$24\frac{1}{8}$ " " " "	$3\frac{3}{4}$	-.300	-.083
$25\frac{1}{8}$ " " " "	$3\frac{7}{8}$	-.300	-.083
$26\frac{1}{8}$ " " " "	$4\frac{1}{8}$	-.300	-.109

While the above sizes are generally considered standard, the majority of the mills roll strips as wide as 20 inches in the heavier gages.

DECIMAL SPECIFICATIONS PREFERRED

The gage used by the manufacturers of bands, hoops and strips is the Birmingham Wire Gage but it is recommended by the S. A. E. when writing specifications for bands, hoops and strips that the thickness desired be expressed in thousandths of an inch.

List of Nine Different Standard Wire Gauges Used In the United States.

DECIMAL EQUIVALENTS (Inches)

No. of Gauge	American or Brown & Sharpe Iron Wire	Birmingham or Stubbs Iron Wire	Washburn & Moen Iron Wire	Imperial Wire Gauge	U. S. Standard for Plate (Iron & Steel)	Stubbs Steel Wire	Twist Drill and Steel Wire	Washburn & Moen Music Wire	Wood and Machine Screws	No. of Gauge	Fractional Parts of an Inch	Decimal Equiv. of fourths, etc.
8-0	.....	.....	.....	.....	.....	.....	This gauge from one to three thousandths larger than same No. of Stubbs steel wire gauge	.0083	.....	8-0	$\frac{1}{64}$	.01563
7-0	.....	.....	.....	.....	.500	.....	.....	.0087	.....	7-0	$\frac{1}{32}$	.03125
6-0	.....	.....	.....	.464	.469	.....	.....	.0095	.....	6-0	$\frac{1}{16}$	.125
5-0	.....	.....	.....	.432	.438	.....	.....	.010	.....	5-0	$\frac{3}{32}$	.09375
4-0	.460	.454	.394	.400	.406	.....	.....	.011	.....	4-0	$\frac{1}{8}$	.125
3-0	.410	.425	.363	.372	.375	.....	.....	.012	.035	3-0	$\frac{3}{16}$	.1875
2-0	.365	.380	.331	.348	.344	.....	.....	.013	.045	2-0	$\frac{1}{4}$	.25
0	.325	.340	.307	.334	.313	.....	.....	.014	.058	0	$\frac{1}{2}$	.500
1	.289	.300	.283	.300	.281	.277	.228	.016	.071	1	$\frac{5}{8}$	.625
2	.258	.284	.263	.276	.266	.219	.221	.017	.084	2	$\frac{3}{4}$	.750
3	.229	.259	.244	.252	.250	.213	.213	.018	.097	3	$\frac{7}{8}$	.875
4	.204	.238	.225	.232	.234	.207	.209	.019	.110	4	$\frac{15}{16}$	.9375
5	.182	.220	.207	.212	.219	.204	.206	.020	.124	5	$\frac{1}{16}$	.0625
6	.162	.203	.192	.192	.203	.201	.204	.022	.137	6	$\frac{1}{8}$	.125
7	.144	.180	.177	.176	.188	.199	.201	.023	.150	7	$\frac{3}{16}$	.1875
8	.128	.165	.162	.160	.172	.197	.199	.024	.163	8	$\frac{1}{4}$	.25
9	.114	.148	.148	.144	.156	.194	.196	.026	.176	9	$\frac{5}{16}$	.3125
10	.102	.134	.135	.128	.141	.191	.194	.027	.189	10	$\frac{3}{8}$	.375
11	.091	.120	.121	.116	.125	.188	.191	.028	.203	11	$\frac{7}{16}$	.4375
12	.081	.109	.106	.104	.109	.185	.189	.030	.216	12	$\frac{1}{2}$	.500
13	.072	.095	.092	.092	.094	.182	.185	.031	.229	13	$\frac{5}{8}$	.625
14	.064	.083	.080	.080	.078	.180	.182	.033	.242	14	$\frac{3}{4}$	.750
15	.057	.072	.072	.072	.070	.178	.180	.035	.255	15	$\frac{7}{8}$	.875
16	.051	.065	.063	.064	.063	.175	.177	.036	.268	16	$\frac{15}{16}$	.9375
17	.045	.058	.054	.056	.056	.172	.173	.038	.282	17	$\frac{1}{16}$	.0625
18	.040	.049	.048	.048	.050	.168	.170	.040	.295	18	$\frac{1}{8}$	.125
19	.036	.042	.041	.040	.044	.164	.166	.041	.308	19	$\frac{3}{16}$	.1875
20	.032	.035	.035	.036	.038	.161	.161	.043	.321	20	$\frac{1}{4}$	.25
21	.028	.032	.032	.032	.034	.157	.159	.046	.334	21	$\frac{5}{16}$	.3125
22	.025	.028	.029	.028	.031	.155	.157	.048	.347	22	$\frac{3}{8}$	.375
23	.023	.025	.026	.024	.028	.153	.154	.051	.360	23	$\frac{7}{16}$	.4375
24	.020	.022	.023	.022	.025	.151	.152	.055	.374	24	$\frac{1}{2}$	.500
25	.018	.020	.020	.020	.022	.148	.150	.059	.387	25	$\frac{5}{8}$	.625
26	.016	.018	.018	.018	.019	.144	.147	.063	.400	26	$\frac{3}{4}$	.750
27	.0141	.016	.0173	.0164	.0171	.143	.144	.066	.413	27	$\frac{7}{8}$	.875
28	.0126	.014	.0162	.0149	.0156	.139	.141	.072	.426	28	$\frac{15}{16}$	.9375
29	.0112	.013	.015	.0136	.014	.134	.136	.076	.439	29	$\frac{1}{16}$	.0625
30	.010	.012	.014	.0124	.0125	.127	.129	.080	.453	30	$\frac{1}{8}$	.125
31	.0089	.010	.0132	.0116	.0109	.120	.120	.....	.466	31	$\frac{3}{16}$	.1875
32	.0079	.009	.0128	.0108	.0101	.115	.116	.....	.479	32	$\frac{1}{4}$	.25
33	.007	.008	.0118	.010	.0093	.112	.113	.....	.492	33	$\frac{5}{16}$	.3125
34	.0063	.007	.0104	.0092	.0085	.110	.111	.....	.505	34	$\frac{3}{8}$	.375
35	.0056	.005	.0095	.0084	.0078	.108	.110	.....	.518	35	$\frac{7}{16}$	.4375
36	.005	.004	.009	.0076	.007	.106	.1065	.....	.532	36	$\frac{1}{2}$	.500
37	.0044	.....	.....	.0068	.0066	.103	.104	.....	.545	37	$\frac{5}{8}$	.625
38	.0039	.....	.....	.006	.0062	.101	.1015	.....	.558	38	$\frac{3}{4}$	.750
39	.0035	.....	.....	.0052	.....	.099	.0995	.....	.571	39	$\frac{7}{8}$	.875
40	.0031	.....	.....	.0048	.....	.097	.098	.....	.584	40	$\frac{15}{16}$	.9375
41	.....	.....	.....	.....	.....	.095	.096	.....	.597	41	$\frac{1}{16}$	.0625
42	.....	.....	.....	.....	.....	.092	.094	.....	.611	42	$\frac{1}{8}$	.125
43	.....	.....	.....	.....	.....	.088	.089	.....	.624	43	$\frac{3}{16}$	.1875
44	.....	.....	.....	.....	.....	.085	.086	.....	.637	44	$\frac{1}{4}$	.25
45	.....	.....	.....	.....	.....	.081	.082	.....	.650	45	$\frac{5}{16}$	.3125
46	.....	.....	.....	.....	.....	.079	.081	.....	.663	46	$\frac{3}{8}$	.375
47	.....	.....	.....	.....	.....	.077	.079	.....	.676	47	$\frac{7}{16}$	.4375
48	.....	.....	.....	.....	.....	.075	.076	.....	.690	48	$\frac{1}{2}$	.500
49	.....	.....	.....	.....	.....	.072	.073	.....	.703	49	$\frac{5}{8}$	.625
50	.....	.....	.....	.....	.....	.069	.070	.....	.716	50	$\frac{3}{4}$	.750

LETTER SIZES STUBBS STEEL WIRE

A	.....	.234	I	.....	.272	R	.....	.319
B	.....	.238	J	.....	.277	S	.....	.348
C	.....	.242	K	.....	.281	T	.....	.358
D		.246	L		.290	U		.377
E		.250	M		.295	V		.386
F		.257	N		.302	W		.397
G		.261	O		.316	X		.404
H		.266	P		.323	Y		.419
			Q		.332	Z		

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Sizes of Numbers of the United States Standard Gauge for Sheet and Plate Iron and Steel

AN ACT ESTABLISHING A STANDARD GAUGE FOR SHEET AND PLATE IRON AND STEEL

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled: That for the purpose of securing uniformity the following is established as the only gauge for sheet and plate iron and steel in the United States of America namely:

NUMBER OF GAUGE	Approximate Thickness in Fractions of an Inch	Approximate Thickness in Decimal Parts of an Inch	Weight per Square Foot in Ounces Avoirdupois	Weight per Square Foot in Pounds Avoirdupois
0000000	$\frac{1}{32}$	.5	320	20.00
000000	$\frac{1}{32}$	.46875	300	18.75
00000	$\frac{1}{16}$	.4375	280	17.50
0000	$\frac{1}{16}$	.40625	260	16.25
000	$\frac{1}{8}$	.375	240	15.00
00	$\frac{1}{8}$	.34375	220	13.75
0	$\frac{1}{4}$	.3125	200	12.50
1	$\frac{1}{4}$	.28125	180	11.25
2	$\frac{1}{4}$	.265625	170	10.625
3	$\frac{1}{4}$	.25	160	10.00
4	$\frac{1}{4}$	.234375	150	9.375
5	$\frac{1}{4}$	.21875	140	8.75
6	$\frac{1}{4}$	.203125	130	8.125
7	$\frac{1}{4}$	.1875	120	7.5
8	$\frac{1}{4}$	.171875	110	6.875
9	$\frac{1}{4}$	.15625	100	6.25
10	$\frac{1}{4}$	.140625	90	5.625
11	$\frac{1}{4}$	.125	80	5.00
12	$\frac{1}{4}$	.109375	70	4.375
13	$\frac{1}{4}$	.09375	60	3.75
14	$\frac{1}{4}$	.078125	50	3.125
15	$\frac{1}{4}$	.0703125	45	2.8125
16	$\frac{1}{4}$	.0625	40	2.5
17	$\frac{1}{4}$	.05625	36	2.25
18	$\frac{1}{4}$	.05	32	2.
19	$\frac{1}{4}$	.04375	28	1.75
20	$\frac{1}{4}$	.0375	24	1.50
21	$\frac{1}{4}$	.034375	22	1.375
22	$\frac{1}{4}$	.03125	20	1.25
23	$\frac{1}{4}$	.028125	18	1.25
24	$\frac{1}{4}$	.025	16	1.
25	$\frac{1}{4}$	.021875	14	.875
26	$\frac{1}{4}$	.01875	12	.75
27	$\frac{1}{4}$	.0171875	11	.6875
28	$\frac{1}{4}$	.015625	10	.625
29	$\frac{1}{4}$	.0140625	9	.5625
30	$\frac{1}{4}$	.0125	8	.5
31	$\frac{1}{4}$	.0109375	7	.4375
32	$\frac{1}{4}$	.01015625	6½	.40625
33	$\frac{1}{4}$	.009375	6	.375
34	$\frac{1}{4}$	.00859375	5½	.34375
35	$\frac{1}{4}$	.0078125	5	.3125
36	$\frac{1}{4}$	.00703125	4½	.28125
37	$\frac{1}{4}$	.006640625	4¼	.265625
38	$\frac{1}{4}$	.00625	4	.25

And on and after July first, eighteen hundred and ninety-three, the same and no other shall be used in determining duties and taxes levied by the United States of America on sheet and plate iron and steel. But this act shall not be construed to increase duties upon any articles which may be imported.

SEC. 3.—That in the practical use and application of the standard gauge hereby established a variation of two and one-half per cent. either way may be allowed.

Approved March 3, 1893.

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Weight in Pounds of a Linear Foot of Round, Square and Octagon Steel

Size in Inches	Round	Octagon	Square	Size in Inches	Round	Octagon	Square
$\frac{1}{16}$	.010	.011	.013	$2\frac{1}{2}$	16.79	17.71	21.37
$\frac{1}{8}$	.042	.044	.053	$2\frac{5}{8}$	18.51	19.52	23.56
$\frac{3}{16}$	.094	.099	.120	$2\frac{3}{4}$	20.31	21.42	25.86
$\frac{1}{4}$	.168	.177	.214	$2\frac{7}{8}$	22.20	23.41	28.27
$\frac{5}{16}$	.262	.277	.334	3	24.17	25.50	30.78
$\frac{3}{8}$	.378	.398	.491	$3\frac{1}{8}$	26.23	27.66	33.40
$\frac{7}{16}$	.514	.542	.655	$3\frac{1}{4}$	28.37	29.92	36.12
$\frac{1}{2}$	.671	.708	.855	$3\frac{3}{8}$	30.59	32.27	38.95
$\frac{9}{16}$	.850	.896	1.082	$3\frac{1}{2}$	32.90	34.70	41.89
$\frac{5}{8}$	1.049	1.107	1.336	$3\frac{5}{8}$	35.29	37.23	44.94
$1\frac{1}{16}$	1.270	1.339	1.616	$3\frac{3}{4}$	37.77	39.84	48.09
$\frac{3}{4}$	1.511	1.594	1.924	$3\frac{7}{8}$	40.33	42.54	51.35
$1\frac{1}{8}$	1.773	1.870	2.258	4	42.97	45.33	54.72
$\frac{7}{8}$	2.056	2.169	2.618	$4\frac{1}{4}$	48.51	51.17	61.77
$1\frac{1}{4}$	2.361	2.490	3.006	$4\frac{1}{2}$	54.39	57.37	69.25
$1\frac{1}{2}$	2.686	2.833	3.420	$4\frac{3}{4}$	60.60	63.92	77.16
$1\frac{3}{4}$	3.399	3.585	4.328	5	67.15	70.83	85.50
$1\frac{5}{8}$	4.197	4.427	5.344	$5\frac{1}{4}$	74.03	78.08	94.26
$1\frac{3}{4}$	5.078	5.356	6.466	$5\frac{1}{2}$	81.25	85.70	103.45
$1\frac{7}{8}$	6.044	6.374	7.695	$5\frac{3}{4}$	88.80	93.67	113.07
$1\frac{9}{8}$	7.093	7.481	9.031	6	96.69	101.99	123.12
$1\frac{5}{4}$	8.226	8.674	10.474	7	131.61	138.82	167.58
$1\frac{3}{2}$	9.443	9.960	12.023	8	171.90	181.32	218.88
2	10.744	11.332	13.680	9	217.57	229.48	277.02
$2\frac{1}{4}$	12.129	12.793	15.443	10	268.60	283.31	342.00
$2\frac{1}{2}$	13.598	14.343	17.314	11	325.01	342.80	413.82
$2\frac{3}{4}$	15.151	15.981	19.291	12	386.79	407.97	492.48

Proportionate Weight of Castings to Weight of Wood Patterns

A PATTERN WEIGHING ONE POUND, MADE OF (Less Weight of Core Prints)	Cast Iron	Brass	Copper	Bronze	Bell Metal	Zinc
Pine or Fir.....	16	15.8	16.7	16.3	17.1	13.5
Oak.....	9	10.1	10.4	10.3	10.9	8.6
Beech.....	9.7	10.9	11.4	11.3	11.9	9.1
Linden.....	13.4	15.1	16.7	15.5	16.3	12.9
Pear.....	10.2	11.5	11.9	11.8	12.4	9.8
Birch.....	10.6	11.9	12.3	12.2	12.9	10.2
Alder.....	12.8	14.3	14.9	14.7	15.5	12.2
Mahogany.....	11.7	13.2	13.7	13.5	14.2	11.2
Brass.....	0.85	0.95	0.99	0.98	1.0	0.81

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WEIGHT OF STEEL PER LINEAR FOOT
PLAT SIZES

	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{3}{4}$	3	$3\frac{1}{2}$	4	5	6	7
$\frac{1}{8}$	.213	.266	.320	.372	.426	.479	.530	.585	.640	.745	.850	.955	1.07	1.18	1.28	1.49	1.70	2.13	2.56	2.98
$\frac{3}{16}$	.319	.399	.480	.558	.639	.718	.790	.878	.960	1.12	1.28	1.43	1.60	1.76	1.92	2.24	2.55	3.20	3.83	4.47
$\frac{1}{4}$	.425	.533	.640	.743	.852	.958	1.06	1.17	1.28	1.49	1.70	1.91	2.13	2.34	2.56	2.98	3.40	4.26	5.11	5.96
$\frac{5}{16}$	.531	.665	.800	.929	1.06	1.20	1.33	1.46	1.60	1.86	2.13	2.39	2.66	2.92	3.19	3.72	4.25	5.32	6.38	7.44
$\frac{3}{8}$	.638	.798	.960	1.12	1.28	1.43	1.59	1.75	1.91	2.23	2.55	2.87	3.20	3.51	3.83	4.46	5.10	6.40	7.66	8.92
$\frac{7}{16}$	.744	.931	1.12	1.30	1.49	1.67	1.86	2.05	2.23	2.60	2.98	3.35	3.72	4.09	4.46	5.21	5.95	7.44	8.92	10.46
$\frac{1}{2}$	.....	1.07	1.28	1.49	1.70	1.91	2.13	2.34	2.55	2.98	3.40	3.83	4.26	4.68	5.10	5.96	6.80	8.52	10.20	11.90
$\frac{9}{16}$	.....	1.20	1.44	1.67	1.91	2.15	2.39	2.63	2.87	3.35	3.83	4.30	4.78	5.26	5.74	6.69	7.65	9.56	11.50	13.40
$\frac{5}{8}$	.....	.....	1.60	1.86	2.12	2.39	2.66	2.92	3.19	3.72	4.26	4.79	5.32	5.84	6.33	7.01	8.18	9.35	11.70	14.90
$1\frac{1}{8}$	.....	.....	1.76	2.04	2.34	2.63	2.92	3.22	3.51	4.09	4.68	5.26	5.84	6.43	7.01	8.18	9.35	11.70	14.00	16.40
$\frac{3}{4}$	.....	.....	.....	2.23	2.55	2.86	3.19	3.50	3.83	4.46	5.10	5.74	6.40	7.02	7.65	8.92	10.20	12.80	15.30	17.90
$1\frac{1}{4}$	.....	.....	.....	2.41	2.76	3.11	3.45	3.80	4.14	4.83	5.53	6.22	6.91	7.60	8.29	9.67	11.10	13.80	16.60	19.30
$\frac{7}{8}$	.....	.....	.....	.....	2.98	3.34	3.72	4.09	4.46	5.21	5.96	6.70	7.46	8.19	8.94	10.42	11.92	14.87	17.88	20.80
$1\frac{3}{8}$	.....	.....	.....	.....	3.19	3.59	3.98	4.38	4.78	5.58	6.38	7.17	7.97	8.77	9.56	11.20	12.80	15.90	19.10	22.40
1	.....	.....	.....	.....	.....	3.82	4.25	4.68	5.10	5.96	6.80	7.66	8.52	9.36	10.20	11.92	13.60	17.04	20.40	23.80
$1\frac{1}{8}$	.....	.....	.....	.....	.....	.....	4.78	5.27	5.74	6.71	7.65	8.61	9.59	10.54	11.48	13.41	15.30	19.17	22.95	26.80
$1\frac{1}{4}$								5.85	6.38	7.45	8.50	9.57	10.65	11.71	12.76	14.90	17.00	21.30	25.61	29.76
$1\frac{3}{8}$								7.02	7.67	8.94	10.20	11.49	12.78	14.04	15.30	17.88	20.40	25.56	30.60	35.76

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Weight in Pounds of Sheet and Bar Aluminum, Brass and Steel

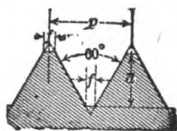
THICKNESS OR DIAM. IN INCH		SHEETS PER SQUARE FOOT			SQUARE BARS, ONE FOOT LONG			ROUND BARS, ONE FOOT LONG		
Frac- tion	Dec.	Alum.	Brass	Steel	Alum.	Brass	Steel	Alum.	Brass	Steel
$\frac{1}{16}$	.0625	.869	2.77	2.52	.004	.014	.013	.003	.011	.010
$\frac{1}{8}$	.125	1.739	5.55	5.10	.018	.057	.053	.014	.047	.042
$\frac{3}{16}$	.1875	2.609	8.32	7.65	.041	.131	.119	.032	.102	.094
$\frac{1}{4}$	.2500	3.479	11.10	10.20	.072	.230	.212	.057	.182	.167
$\frac{5}{16}$	.3125	4.348	13.87	12.75	.114	.380	.333	.089	.284	.261
$\frac{3}{8}$	.3750	5.218	16.64	15.30	.163	.520	.478	.128	.408	.375
$\frac{7}{16}$	.4375	6.088	19.42	17.85	.222	.708	.651	.174	.555	.511
$\frac{1}{2}$	.5000	6.958	22.20	20.40	.290	.925	.850	.227	.724	.667
$\frac{9}{16}$	.5625	7.827	24.97	22.95	.367	1.171	1.076	.288	.919	.845
$\frac{5}{8}$	.6250	8.697	27.74	25.50	.453	1.445	1.328	.356	1.136	1.043
$\frac{11}{16}$	.6875	9.567	30.52	28.05	.548	1.748	1.608	.430	1.372	1.262
$\frac{3}{4}$	.7500	10.436	33.29	30.60	.652	2.080	1.913	.516	1.646	1.502
$\frac{7}{8}$	.8125	11.306	36.07	33.15	.766	2.445	2.245	.601	1.917	1.763
$\frac{15}{16}$	.8750	12.175	38.84	35.70	.888	2.833	2.603	.697	2.223	2.044
1	.9375	13.045	41.61	38.25	1.019	3.251	2.989	.800	2.552	2.347
1 $\frac{1}{16}$	1.0000	13.915	44.39	40.80	1.159	3.697	3.400	.911	2.906	2.670
1 $\frac{1}{8}$	1.0625	14.784	47.16	43.35	1.309	4.176	3.838	1.028	3.279	3.014
1 $\frac{1}{4}$	1.125	15.654	49.94	45.90	1.467	4.630	4.303	1.152	3.673	3.379
1 $\frac{3}{8}$	1.1875	16.524	52.71	48.45	1.635	5.216	4.795	1.284	4.096	3.766
1 $\frac{1}{2}$	1.2500	17.394	55.48	51.00	1.812	5.780	5.312	1.423	4.539	4.173
1 $\frac{5}{8}$	1.3125	18.263	58.26	53.55	1.997	6.370	5.857	1.569	5.003	4.600
1 $\frac{3}{4}$	1.3750	19.133	61.04	56.10	2.192	6.992	6.428	1.722	5.491	5.049
1 $\frac{7}{8}$	1.4375	20.002	63.81	58.65	2.396	7.644	7.026	1.882	6.002	5.518
1 $\frac{15}{16}$	1.5000	20.872	66.58	61.20	2.609	8.322	7.650	2.049	6.536	6.008
2	1.5625	21.741	69.35	63.75	2.831	9.030	8.301	2.223	7.091	6.520
2 $\frac{1}{16}$	1.6250	22.611	72.13	66.30	3.062	9.768	8.978	2.405	7.672	7.051
2 $\frac{1}{8}$	1.6875	23.481	74.90	68.85	3.302	10.53	9.682	2.593	8.271	7.604
2 $\frac{1}{4}$	1.7500	24.350	77.67	71.40	3.550	11.32	10.41	2.789	8.896	8.178
2 $\frac{3}{8}$	1.8125	25.250	80.54	73.95	3.810	12.15	11.17	2.992	9.544	8.773
2 $\frac{1}{2}$	1.8750	26.090	83.22	76.50	4.075	13.00	11.95	3.202	10.21	9.388
2 $\frac{3}{4}$	1.9375	26.960	86.00	79.05	4.352	13.88	12.76	3.417	10.90	10.02
2 $\frac{15}{16}$	2.0000	27.829	88.77	81.60	4.638	14.79	13.60	3.642	11.62	10.68

Weight of Aluminum, Iron, Copper, Brass and Lead Balls

Dia. In.	Alum. Lbs.	Iron. Lbs.	Copper. Lbs.	Brass. Lbs.	Lead. Lbs.	Dia. In.	Alum. Lbs.	Iron. Lbs.	Copper. Lbs.	Brass. Lbs.	Lead. Lbs.
1	.045	.136	.166	.158	.214	7	15.58	46.76	57.1	54.5	73.1
1 $\frac{1}{8}$	.153	.46	.562	.537	.727	7 $\frac{1}{2}$	19.17	57.52	70.0	67.11	90.0
2	.363	1.09	1.3	1.25	1.7	8	23.27	69.81	85.2	81.4	110.1
2 $\frac{1}{2}$	.710	2.13	2.60	2.50	3.35	8 $\frac{1}{2}$	27.91	83.73	102.3	100.0	132.3
3	1.22	3.68	4.5	4.3	5.8	9	33.10	99.4	121.3	115.9	184.7
3 $\frac{1}{2}$	1.94	5.84	7.14	6.82	9.23	9 $\frac{1}{2}$	38.90	116.9	143.0	136.4	215.0
4	2.90	8.72	10.7	10.2	13.8	10	45.45	136.35	166.4	159.0	250.0
4 $\frac{1}{2}$	3.13	12.42	15.25	14.5	19.6	10 $\frac{1}{2}$	52.60	157.84	193.0	184.0	286.7
5	5.68	17.04	20.8	19.9	26.9	11	60.49	181.48	221.8	211.8	327.7
5 $\frac{1}{2}$	7.56	22.68	27.74	26.47	36.0	11 $\frac{1}{2}$	69.12	207.37	253.5	242.0	372.7
6	9.81	29.45	35.9	34.3	46.4	12	78.54	235.62	288.1	275.0	
6 $\frac{1}{2}$	12.48	37.44	45.76	43.67	59.13						

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UNITED STATES 60° SCREW THREAD



$$\text{Formula} \begin{cases} p = \text{pitch} = \frac{1}{\text{No. threads per inch}} \\ d = \text{depth} = p \times .6495 \\ f = \text{flat} = \frac{p}{8} \end{cases}$$

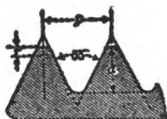
Diameter of Screw	Threads to Inch	Diameter at Root of Thread	Width of Flat
$\frac{1}{8}$	20	.185	.0063
$\frac{9}{16}$	18	.2403	.0069
$\frac{3}{8}$	16	.2936	.0078
$\frac{7}{16}$	14	.3447	.0089
$\frac{1}{2}$	13	.4001	.0096
$\frac{5}{8}$	12	.4542	.0104
$\frac{3}{4}$	11	.5069	.0114
$\frac{7}{8}$	10	.6201	.0125
1	9	.7307	.0139
$1\frac{1}{8}$	8	.8376	.0156
$1\frac{1}{4}$	7	.9394	.0179
$1\frac{3}{8}$	7	1.0644	.0179
$1\frac{1}{2}$	6	1.1585	.0208
$1\frac{3}{4}$	6	1.2835	.0208
$1\frac{7}{8}$	$5\frac{1}{2}$	1.3888	.0227
2	5	1.4902	.0250
$2\frac{1}{8}$	5	1.6152	.0250
$2\frac{1}{4}$	$4\frac{1}{2}$	1.7113	.0278
$2\frac{3}{8}$	$4\frac{1}{2}$	1.9613	.0278
$2\frac{1}{2}$	4	2.1752	.0313
$2\frac{3}{4}$	4	2.4252	.0313
3	$3\frac{1}{2}$	2.6288	.0357
$3\frac{1}{8}$	$3\frac{1}{2}$	2.8788	.0357
$3\frac{1}{4}$	$3\frac{1}{2}$	3.1003	.0385
$3\frac{3}{8}$	3	3.3170	.0417
4	3	3.5670	.0418
$4\frac{1}{8}$	$2\frac{7}{8}$	3.7982	.0455
$4\frac{1}{4}$	$2\frac{7}{8}$	4.0276	.0455
$4\frac{3}{8}$	$2\frac{7}{8}$	4.2551	.0476
5	$2\frac{1}{2}$	4.4804	.0500
$5\frac{1}{8}$	$2\frac{1}{2}$	4.7304	.0500
$5\frac{1}{4}$	$2\frac{1}{2}$	4.9530	.0526
$5\frac{3}{8}$	$2\frac{1}{2}$	5.2030	.0526
6	$2\frac{1}{4}$	5.4226	.0556

STANDARD PROPORTIONS FOR MACHINE SCREWS

The report of the committee on standard proportions for machine screws of the American Society of Mechanical Engineers is published in the October, 1906, proceedings of the society. The report is substantially in agreement with the recommendations adopted at the joint meeting held in New York, April 11, 1904.

The committee believes the following combined details to be essential in establishing and maintaining a standard for the diameters, threads and heads of machine screws, including, as it does, diameters, threads and limits for the taps which are to be used in connection therewith: (a) form of thread, (b) diameters, (c) number of threads per inch, (d) standard reference thread gauges, basic and for screws and taps, (e) working gauges for screws and taps, (f) limits of variation, measured in the angle of the thread, (g) limits of variation in external diameter, (h) limits of variation in the pitch of the thread screws and taps, (k) proportions of the heads.

Whitworth Standard Thread



Formula

$$\begin{cases} p = \text{pitch} = \frac{1}{\text{No. threads per inch}} \\ d = \text{depth} = p \times .64033 \\ r = \text{radius} = p \times .1373 \end{cases}$$

Full Diameter	No. of Threads per Inch	Pitch	Standard Depth of Thread	Effective Diameter	Core Diameter	Cross Sectional Area at Bottom of Thread
1 (.25)	20	.0500	.0320	.2180	.1860	.0272
1 1/4 (.3125)	18	.0556	.0356	.2769	.2414	.0458
1 1/2 (.375)	16	.0625	.0400	.3350	.2950	.0683
1 3/4 (.4375)	14	.0714	.0457	.3918	.3460	.0940
2 (.5)	12	.0833	.0534	.4466	.3933	.1215
2 1/4 (.5625)	12	.0833	.0534	.5091	.4558	.1632
2 1/2 (.625)	11	.0909	.0582	.5668	.5086	.2032
2 3/4 (.6875)	11	.0909	.0582	.6293	.5711	.2562
3 (.75)	10	.1000	.0640	.6860	.6219	.3038
3 1/4 (.8125)	10	.1000	.0640	.7485	.6844	.3679
3 1/2 (.875)	9	.1111	.0711	.8039	.7327	.4216
4	8	.1250	.0800	.9200	.8399	.5540
4 1/4 (1.125)	7	.1429	.0915	1.0335	.9420	.6969
4 1/2 (1.25)	7	.1429	.0915	1.1585	1.0670	.8942
4 3/4 (1.375)	6	.1667	.1067	1.2683	1.1616	1.0597
5 (1.5)	6	.1667	.1067	1.3933	1.2866	1.3001
5 1/4 (1.625)	5	.2000	.1281	1.4969	1.3689	1.4718
5 1/2 (1.75)	5	.2000	.1281	1.6219	1.4939	1.7528
6	4 1/2	.2222	.1423	1.8577	1.7154	2.3111
6 1/4 (2.25)	4	.2500	.1601	2.0899	1.9298	2.9249
6 1/2 (2.5)	4	.2500	.1601	2.3399	2.1798	3.7318
6 3/4 (2.75)	3 1/2	.2857	.1830	2.5670	2.3841	4.4641
7	3 1/2	.2857	.1830	2.8170	2.6341	5.4496
7 1/4 (3.25)	3 1/4	.3077	.1970	3.0530	2.8560	6.4063
7 1/2 (3.5)	3 1/4	.3077	.1970	3.3030	3.1060	7.5769
7 3/4 (3.75)	3	.3333	.2134	3.5366	3.231	8.6732
8	3	.3333	.2134	3.7866	3.5731	10.0272
8 1/4 (4.50)	2 1/2	.3478	.2227	4.2773	4.0546	12.9118
8 1/2	2 1/2	.3636	.2328	4.7672	4.5943	16.1477
8 3/4 (5.50)	2 1/4	.3810	.2439	5.2561	5.0121	19.7301
9	2 1/4	.4000	.2561	5.7439	5.4877	23.6521

International (Metric System) Standard 60° Thread

Diameter of Screw	Pitch	Diameter at Root of Thread	Width of Flat at Top and Bottom of Thread
<i>Millimetres</i>	<i>Millimetres</i>	<i>Millimetres</i>	<i>Millimetres</i>
3	.5	2.35	.06
4	.75	3.03	.09
5	.75	4.03	.09
6	1.0	4.70	.13
7	1.0	5.70	.13
8	1.0	6.70	.13
8	1.25	6.38	.16
9	1.0	7.70	.13
9	1.25	7.38	.16
10	1.5	8.05	.19
11	1.5	9.05	.19
12	1.5	10.05	.19
12	1.75	9.73	.22
14	2.0	11.40	.25
16	2.0	13.40	.25
18	2.5	14.75	.31
20	2.5	16.75	.31
22	2.5	18.75	.31
22	3.0	18.10	.38
24	3.0	20.10	.38
26	3.0	22.10	.38
27	3.0	23.10	.38
28	3.0	24.10	.38
30	3.5	25.45	.44
32	3.5	27.45	.44
33	3.5	28.45	.44
34	3.5	29.45	.44
36	4.0	30.80	.5
38	4.0	32.80	.5
39	4.0	33.80	.5
40	4.0	34.80	.5
42	4.5	36.15	.56
44	4.5	38.15	.56
45	4.5	39.15	.56
46	4.5	40.15	.56
48	5.0	41.51	.63
50	5.0	43.51	.63
52	5.0	45.51	.63

NOTE.—This thread is largely used by Italian constructors.

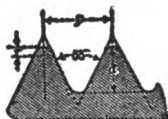
Drill Sizes for S. A. E. Threads

Size of Tap	Size of Drill
$\frac{1}{16}$ inch x 28 threads	$\frac{7}{32}$ inch
$\frac{5}{16}$ " x 24 "	$\frac{17}{64}$ "
$\frac{3}{8}$ " x 24 "	$\frac{21}{64}$ "
$\frac{7}{16}$ " x 20 "	$\frac{3}{8}$ "
$\frac{1}{2}$ " x 20 "	$\frac{7}{16}$ "
$\frac{9}{16}$ " x 18 "	$\frac{1}{2}$ "
$\frac{5}{8}$ " x 18 "	$\frac{9}{16}$ "
$\frac{3}{4}$ " x 16 "	$\frac{89}{64}$ "
$\frac{7}{8}$ " x 16 "	$\frac{43}{32}$ "
$\frac{1}{2}$ " x 14 "	$\frac{25}{32}$ "
1 " x 14 "	$\frac{29}{32}$ "
1 $\frac{1}{8}$ " x 12 "	1 $\frac{1}{16}$ "
1 $\frac{1}{4}$ " x 12 "	1 $\frac{3}{16}$ "
1 $\frac{3}{8}$ " x 12 "	1 $\frac{17}{64}$ "
1 $\frac{1}{2}$ " x 12 "	1 $\frac{25}{64}$ "

The above tap drills allow a thread within 1-64 in. of full thread.

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Whitworth Standard Thread



Formula

$$\begin{cases} p = \text{pitch} = \frac{1}{\text{No. threads per inch}} \\ d = \text{depth} = p \times .64033 \\ r = \text{radius} = p \times .1373 \end{cases}$$

Full Diameter	No. of Threads per Inch	Pitch	Standard Depth of Thread	Effective Diameter	Core Diameter	Cross Sectional Area at Bottom of Thread
1 (.25)	20	.0500	.0320	.2180	.1860	.0272
1 1/4 (.3125)	18	.0556	.0356	.2769	.2414	.0458
1 1/2 (.375)	16	.0625	.0400	.3350	.2950	.0683
1 3/4 (.4375)	14	.0714	.0457	.3918	.3460	.0940
2 (.5)	12	.0833	.0534	.4466	.3933	.1215
2 1/4 (.5625)	12	.0833	.0534	.5091	.4558	.1632
2 1/2 (.625)	11	.0909	.0582	.5668	.5086	.2032
2 3/4 (.6875)	11	.0909	.0582	.6293	.5711	.2562
3 (.75)	10	.1000	.0640	.6860	.6219	.3038
3 1/4 (.8125)	10	.1000	.0640	.7485	.6844	.3679
3 1/2 (.875)	9	.1111	.0711	.8039	.7327	.4216
4	8	.1250	.0800	.9200	.8399	.5540
4 1/4 (1.125)	7	.1429	.0915	1.0335	.9420	.6969
4 1/2 (1.25)	7	.1429	.0915	1.1585	1.0670	.8942
4 3/4 (1.375)	6	.1667	.1067	1.2683	1.1616	1.0597
5 (1.5)	6	.1667	.1067	1.3933	1.2866	1.3001
5 1/4 (1.625)	5	.2000	.1281	1.4969	1.3689	1.4718
5 1/2 (1.75)	5	.2000	.1281	1.6219	1.4939	1.7528
6	4 1/2	.2222	.1423	1.8577	1.7154	2.3111
6 1/4 (2.25)	4	.2500	.1601	2.0899	1.9298	2.9249
6 1/2 (2.5)	4	.2500	.1601	2.3399	2.1798	3.7318
6 3/4 (2.75)	3 1/2	.2857	.1830	2.5670	2.3841	4.4641
7	3 1/2	.2857	.1830	2.8170	2.6341	5.4496
7 1/4 (3.25)	3 1/2	.3077	.1970	3.0530	2.8560	6.4063
7 1/2 (3.5)	3 1/2	.3077	.1970	3.3030	3.1060	7.5769
7 3/4 (3.75)	3	.3333	.2134	3.5366	3.231	8.6732
8	3	.3333	.2134	3.7866	3.5731	10.0272
8 1/4 (4.50)	2 1/2	.3478	.2227	4.2773	4.0546	12.9118
8 1/2	2 1/2	.3636	.2328	4.7672	4.5343	16.1477
8 3/4 (5.50)	2 1/2	.3810	.2439	5.2561	5.0121	19.7301
9	2 1/2	.4000	.2561	5.7439	5.4877	23.6321

International (Metric System) Standard 60° Thread

Diameter of Screw	Pitch	Diameter at Root of Thread	Width of Flat at Top and Bottom of Thread
<i>Millimetres</i>	<i>Millimetres</i>	<i>Millimetres</i>	<i>Millimetres</i>
3	.5	2.35	.06
4	.75	3.03	.09
5	.75	4.03	.09
6	1.0	4.70	.13
7	1.0	5.70	.13
8	1.0	6.70	.13
8	1.25	6.38	.16
9	1.0	7.70	.13
9	1.25	7.38	.16
10	1.5	8.05	.19
11	1.5	9.05	.19
12	1.5	10.05	.19
12	1.75	9.73	.22
14	2.0	11.40	.25
16	2.0	13.40	.25
18	2.5	14.75	.31
20	2.5	16.75	.31
22	2.5	18.75	.31
22	3.0	18.10	.38
24	3.0	20.10	.38
26	3.0	22.10	.38
27	3.0	23.10	.38
28	3.0	24.10	.38
30	3.5	25.45	.44
32	3.5	27.45	.44
33	3.5	28.45	.44
34	3.5	29.45	.44
36	4.0	30.80	.5
38	4.0	32.80	.5
39	4.0	33.80	.5
40	4.0	34.80	.5
42	4.5	36.15	.56
44	4.5	38.15	.56
45	4.5	39.15	.56
46	4.5	40.15	.56
48	5.0	41.51	.63
50	5.0	43.51	.63
52	5.0	45.51	.63

NOTE.—This thread is largely used by Italian constructors.

Drill Sizes for S. A. E. Threads

Size of Tap	Size of Drill
$\frac{1}{16}$ inch x 28 threads	$\frac{7}{64}$ inch
$\frac{3}{16}$ " x 24 "	$\frac{17}{64}$ "
$\frac{7}{16}$ " x 24 "	$\frac{21}{64}$ "
$\frac{1}{2}$ " x 20 "	$\frac{3}{8}$ "
$\frac{1}{2}$ " x 20 "	$\frac{7}{16}$ "
$\frac{9}{16}$ " x 18 "	$\frac{1}{2}$ "
$\frac{5}{8}$ " x 18 "	$\frac{9}{16}$ "
$\frac{11}{16}$ " x 16 "	$\frac{89}{64}$ "
$\frac{3}{4}$ " x 16 "	$\frac{43}{64}$ "
$\frac{7}{8}$ " x 14 "	$\frac{25}{32}$ "
1 " x 14 "	$\frac{29}{32}$ "
1 $\frac{1}{8}$ " x 12 "	1 $\frac{1}{64}$ "
1 $\frac{1}{4}$ " x 12 "	1 $\frac{9}{64}$ "
1 $\frac{3}{8}$ " x 12 "	1 $\frac{17}{64}$ "
1 $\frac{1}{2}$ " x 12 "	1 $\frac{25}{64}$ "

The above tap drills allow a thread within 1-64 in. of full thread.

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Drill Sizes for Standard Threads

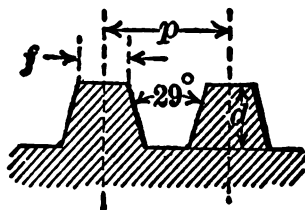
These sizes give an allowance above the bottom of thread on sizes $\frac{1}{4}$ to 2; varying respectively as follows: for "V" Threads, .010" to .055"; for U. S. S. and Whitworth threads .003" to .027".

These are found by adding to the size at bottom of thread $\frac{1}{4}$ of the pitch for "V" threads, and $\frac{1}{8}$ of the pitch for U. S. S. and Whitworth, the pitch being equal to $1" \div \text{No. of threads per } 1"$.

In practice it is better to use a larger drill if the exact size called for cannot be had.

Size Screw	No. of Threads	SIZE OF DRILL			Size Screw	No. of Threads	SIZE OF DRILL		
		U. S. S.	"V"	W.			U. S. S.	"V"	W.
$\frac{1}{4}$	24	.201	.196	.202	$1\frac{1}{16}$	9	.808	.790	.810
$\frac{1}{2}$	20	.191	.184	.192	1	8	.854	.832	.856
$\frac{3}{8}$	18	.248	.239	.249	$1\frac{1}{8}$	8	.917	.894	.919
$\frac{7}{16}$	16	.302	.293	.303	$1\frac{1}{4}$	7	.957	.932	.960
$\frac{1}{2}$	14	.354	.345	.355	$1\frac{3}{8}$	7	1.082	1.057	1.085
$\frac{3}{4}$	13	.409	.399	.410	$1\frac{1}{2}$	6	1.179	1.144	1.182
$\frac{7}{8}$	12	.462	.391	.403	$1\frac{5}{8}$	6	1.304	1.269	1.307
1	12	.465	.453	.466	$1\frac{3}{4}$	$5\frac{1}{2}$	1.412	1.372	1.416
$1\frac{1}{8}$	11	.518	.506	.520	2	5	1.390	1.347	1.394
$1\frac{1}{4}$	11	.581	.568	.583	$2\frac{1}{8}$	5	1.515	1.472	1.519
$1\frac{3}{8}$	10	.632	.618	.634	$2\frac{1}{4}$	5	1.640	1.597	1.644
$1\frac{1}{2}$	10	.695	.680	.697	$2\frac{3}{8}$	$4\frac{1}{2}$	1.614	1.566	1.619
$1\frac{3}{4}$	9	.745	.728	.747	$2\frac{1}{2}$	$4\frac{3}{4}$	1.739	1.691	1.744

The Acme Standard Thread



The Acme Standard Thread is a little shallower than the Worm Thread, but the same depth as the square thread and much stronger than the latter.

The various parts are obtained as follows:

$$\text{Width of Point of Tool for Screw or Tap Thread} = \frac{.3707}{\text{No. of Threads per in.}} - .0052$$

$$\text{Width of Screw or Nut Thread} = \frac{\text{No. of Threads per in.}}{.3707}$$

$$\text{Diameter of Tap} = \text{Diameter of Screw} + .020$$

$$\text{Diameter of Tap or Screw at Root} = \text{Diameter of Screw} - \left\{ \frac{1}{\text{No. of Linear Threads per in.}} + .020 \right\}$$

$$\text{Depth of Thread} = \frac{1}{2 \times \text{No. of Threads per in.}} + .010$$

(Continued on following page)

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TABLE OF ACME THREAD PARTS

No. of Threads per Inch	Depth of Thread	Width at Top of Thread	Width at Bottom of Thread	Space at Top of Thread	Thickness at Root of Thread
1	.5100	.3707	.3655	.6293	.6345
1½	.3850	.2780	.2728	.4720	.4772
2	.2600	.1853	.1801	.3147	.3199
3	.1767	.1235	.1183	.2098	.2150
4	.1350	.0927	.0875	.1573	.1625
5	.1100	.0741	.0689	.1259	.1311
6	.0933	.0618	.0566	.1049	.1101
7	.0814	.0529	.0478	.0899	.0951
8	.0725	.0463	.0411	.0787	.0839
9	.0655	.0413	.0361	.0699	.0751
10	.0600	.0371	.0319	.0629	.0681

CONSTANTS FOR FINDING DIAMETER AT BOTTOM OF ACME THREAD

Threads per Inch	U. S. Standard Constant	Sharp V Thread Constant	Threads per Inch	U. S. Standard Constant	Sharp V Thread Constant
64	.02029	.02706	16	.08118	.10825
60	.02165	.02887	14	.09278	.12357
56	.02319	.03093	13	.09992	.13323
50	.02598	.03464	12	.10825	.14433
48	.02706	.03608	11	.11809	.15745
44	.02952	.03936	10	.12990	.17320
40	.03247	.04330	9	.14433	.19244
36	.03608	.04811	8	.16237	.21650
32	.04059	.05412	7	.18555	.24742
30	.04330	.05773	6	.21650	.28866
28	.04639	.06185	5½	.23618	.31490
26	.04996	.06661	5	.25980	.34650
24	.05412	.07216	4½	.28866	.38488
22	.05904	.07872	4	.32475	.43300
20	.06495	.08660	3½	.37114	.49485
18	.07216	.09622	3	.43333	.57733

C = Constant for number of threads per inch.

D = Outside diameter.

D¹ = Diameter at bottom of thread.

$$D^1 = D - C.$$

EXAMPLE.—Given outside diameter of U. S. S. screw thread, 2 inches, 4½ threads per inch; find diameter at bottom of thread. D = 2 inches; for 4½ threads U. S. S., constant, C = .2886; then diameter at bottom of thread, D¹ = 2 - .2886 = 1.7114 inches.

NOTE.—The above formula and constants are based on a perfectly sharp thread in considering V threads. With the usual blunted threads, therefore, the actual bottom diameters are a trifle larger for bolts and a trifle smaller for nuts than the diameters obtained with the formula and V-thread constants.

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Approximate Capacities in Liquid Gallons of Cylindrical Tanks

1	2	3	4	5	6	7	8	9	10	Gallons	Gal'ns per Inch
5x12	6x18	6x24	6x36	6x42	7x36 8x30 9x24 10x20	7x42	7x48	8x45 9x36 10x28 12x20	8x48 9x40 10x32 12x24	6" diam'r	.122
	7x12	7x18	7x24	7x30		8x36	8x42			7" "	.165
		8x15	8x18	8x24		9x30	9x34			8" "	.217
		9x12	9x15	9x18		10x24	10x26			9" "	.275
						12x16	12x18			10" "	.340
										12" "	.486

10	15	20	25	30	35	40	45	50	Gallons	Gal'ns per Inch
8x48 9x40 10x32 12x24 14x18	10x48 12x34 14x24 16x18	12x42 14x30 16x24	12x50 14x38 16x30	12x60 14x44 16x36	14x52 16x42	14x60 16x48	16x54	16x60	8" diam'r	.217
									9" "	.275
									10" "	.340
									12" "	.486
									14" "	.666
									16" "	.870

Areas of Small Circles

Figured from diameters in decimal fractions of 1 inch (or other unit of linear measurement).

Diameter	SECOND DECIMAL IN LENGTH OF DIAMETER									
	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.0	.000078	.00031	.0007	.00125	.00196	.00283	.00385	.00503	.00636
.1	.0078	.0095	.0113	.0133	.0154	.0177	.0201	.0227	.0255	.0283
.2	.0314	.03464	.038	.0415	.0452	.0491	.0531	.0572	.0616	.066
.3	.0706	.0755	.0804	.0855	.0908	.0962	.1018	.1075	.1134	.1195
.4	.1256	.132	.1385	.1452	.1520	.1590	.1662	.1735	.181	.1886
.5	.1963	.2043	.2124	.2206	.2290	.2376	.2463	.2552	.2642	.2734
.6	.2827	.2922	.3014	.3117	.3217	.3318	.3421	.3526	.3632	.3739
.7	.3848	.3959	.4071	.4185	.4301	.4418	.4536	.4657	.4778	.4902
.8	.5026	.5153	.5281	.5411	.5542	.5674	.5809	.5945	.6082	.6221
.9	.6362	.6504	.6648	.6793	.694	.7088	.7238	.739	.7543	.7698

Example: What is area of circle with diameter 0.45 inch (or centimeter). Follow line .4 column .05. Answer: .1590 square inch (or square centimeter).

Circumferences and Areas of Circles

Diameters from 1-64 inch to 63 inches

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
$\frac{1}{64}$	.04909	.00019	2	6.2832	3.1416	5	15.708	19.635
$\frac{1}{32}$	.09818	.00077	$\frac{1}{8}$	6.4795	3.3410	$\frac{1}{8}$	15.904	20.129
$\frac{1}{16}$	.14726	.00173	$\frac{1}{4}$	6.6759	3.5466	$\frac{1}{4}$	16.101	20.629
$\frac{3}{32}$	.19635	.00307	$\frac{3}{8}$	6.8722	3.7583	$\frac{3}{8}$	16.297	21.135
$\frac{1}{8}$	.2452	.00690	$\frac{1}{2}$	7.0686	3.9761	$\frac{1}{2}$	16.493	21.648
$\frac{5}{32}$	.29270	.01227	$\frac{5}{8}$	7.2649	4.2000	$\frac{5}{8}$	16.690	22.166
$\frac{3}{16}$	.49087	.01917	$\frac{3}{4}$	7.4613	4.4301	$\frac{3}{4}$	16.886	22.691
$\frac{1}{4}$	.58905	.02761	$\frac{7}{8}$	7.6576	4.6664	$\frac{7}{8}$	17.082	23.221
$\frac{5}{16}$	.68722	.03758	$\frac{15}{16}$	7.8540	4.9087	$\frac{15}{16}$	17.279	23.758
$\frac{3}{8}$	.78540	.04909	$\frac{1}{2}$	8.0503	5.1572	$\frac{1}{2}$	17.475	24.301
$\frac{7}{16}$	.88357	.06213	$\frac{3}{4}$	8.2467	5.4119	$\frac{3}{4}$	17.671	24.850
$\frac{1}{2}$	.98175	.07670	$\frac{7}{8}$	8.4430	5.6727	$\frac{7}{8}$	17.868	25.406
$\frac{5}{8}$	1.0799	.09281	$\frac{15}{16}$	8.6394	5.9396	$\frac{15}{16}$	18.064	25.967
$\frac{3}{4}$	1.1781	.11045	$\frac{1}$	8.8357	6.2126	$\frac{1}$	18.261	26.535
$\frac{7}{8}$	1.2763	.12962	$\frac{1 1}{8}$	9.0321	6.4918	$\frac{1 1}{8}$	18.457	27.109
$\frac{15}{16}$	1.3744	.15033	$\frac{1 1}{4}$	9.2284	6.7771	$\frac{1 1}{4}$	18.653	27.688
$\frac{1}$	1.4726	.17257	3	9.4284	7.0686	6	18.850	28.274
$\frac{1 1}{16}$	1.5708	.19635	$\frac{1 1}{2}$	9.6211	7.3662	$\frac{1 1}{2}$	19.242	29.465
$\frac{1 1}{8}$	1.6690	.22166	$\frac{3}{2}$	9.8175	7.6699	$\frac{3}{2}$	19.635	30.680
$\frac{3}{2}$	1.7671	.24850	$\frac{7}{4}$	10.014	7.9798	$\frac{7}{4}$	20.028	31.919
$\frac{7}{4}$	1.8653	.27688	$\frac{2}$	10.210	8.2958	$\frac{2}$	20.420	33.183
$\frac{9}{4}$	1.9635	.30680	$\frac{5}{2}$	10.407	8.6179	$\frac{5}{2}$	20.813	34.472
$\frac{5}{2}$	2.0617	.33824	$\frac{3}{2}$	10.603	8.9462	$\frac{3}{2}$	21.206	35.785
$\frac{11}{2}$	2.1598	.37122	$\frac{7}{2}$	10.799	9.2806	$\frac{7}{2}$	21.598	37.122
$\frac{13}{2}$	2.2580	.40574	$\frac{4}$	10.996	9.6211	7	21.991	38.485
$\frac{7}{2}$	2.3562	.44179	$\frac{9}{2}$	11.192	9.9678	$\frac{7}{2}$	22.384	39.871
$\frac{9}{2}$	2.4544	.47937	$\frac{5}{2}$	11.388	10.321	$\frac{5}{2}$	22.776	41.282
$\frac{11}{2}$	2.5525	.51849	$\frac{3}{2}$	11.585	10.680	$\frac{3}{2}$	23.169	42.718
$\frac{13}{2}$	2.6507	.55914	$\frac{7}{2}$	11.781	11.045	$\frac{7}{2}$	23.562	44.179
$\frac{7}{2}$	2.7489	.60132	$\frac{4}{2}$	11.977	11.416	$\frac{4}{2}$	23.955	45.664
$\frac{9}{2}$	2.8471	.64504	$\frac{9}{2}$	12.174	11.793	$\frac{9}{2}$	24.347	47.173
$\frac{11}{2}$	2.9452	.69029	$\frac{5}{2}$	12.370	12.177	$\frac{5}{2}$	24.740	48.707
$\frac{13}{2}$	3.0434	.73708	$\frac{3}{2}$	12.566	12.566	8	25.133	50.265
1	3.1416	.7854	$\frac{7}{2}$	12.763	12.962	$\frac{7}{2}$	25.525	51.849
$\frac{1 1}{2}$	3.3379	.8866	$\frac{4}{2}$	12.959	13.364	$\frac{4}{2}$	25.918	53.456
$\frac{3}{2}$	3.5343	.9940	$\frac{9}{2}$	13.155	13.772	$\frac{3}{2}$	26.311	55.088
$\frac{5}{2}$	3.7306	1.1075	$\frac{5}{2}$	13.352	14.186	$\frac{5}{2}$	26.704	56.745
$\frac{7}{2}$	3.9270	1.2272	$\frac{3}{2}$	13.548	14.607	$\frac{3}{2}$	27.096	58.426
$\frac{9}{2}$	4.1233	1.3530	$\frac{7}{2}$	13.744	15.033	$\frac{7}{2}$	27.489	60.132
$\frac{11}{2}$	4.3197	1.4849	$\frac{4}{2}$	13.941	15.466	$\frac{4}{2}$	27.882	61.862
$\frac{13}{2}$	4.5160	1.6230	$\frac{9}{2}$	14.137	15.904	$\frac{9}{2}$	28.274	63.617
$\frac{7}{2}$	4.7124	1.7671	$\frac{5}{2}$	14.334	16.349	$\frac{5}{2}$	28.667	65.397
$\frac{9}{2}$	4.9087	1.9175	$\frac{3}{2}$	14.530	16.800	$\frac{3}{2}$	29.060	67.201
$\frac{11}{2}$	5.1051	2.0739	$\frac{7}{2}$	14.726	17.257	$\frac{7}{2}$	29.452	69.029
$\frac{13}{2}$	5.3014	2.2365	$\frac{4}{2}$	14.923	17.728	$\frac{4}{2}$	29.845	70.882
$\frac{15}{2}$	5.4978	2.4053	$\frac{9}{2}$	15.119	18.190	$\frac{9}{2}$	30.238	72.760
$\frac{7}{2}$	5.6941	2.5802	$\frac{5}{2}$	15.315	18.665	$\frac{5}{2}$	30.631	74.662
$\frac{9}{2}$	5.8905	2.7612	$\frac{3}{2}$	15.512	19.147	$\frac{3}{2}$	31.023	76.589
$\frac{11}{2}$	6.0868	2.9483	$\frac{7}{2}$					

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Circumferences and Areas of Circles—(Continued)

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
10	31.416	78.540	15 $\frac{1}{2}$	49.480	194.83	21 $\frac{1}{2}$	68.330	371.54
$\frac{1}{2}$	31.809	80.516	$\frac{1}{2}$	49.873	197.93	$\frac{1}{2}$	68.722	375.83
$\frac{1}{2}$	32.201	82.516	16	50.265	201.06	22	69.115	380.13
$\frac{1}{2}$	32.594	84.541	$\frac{1}{2}$	50.658	204.22	$\frac{1}{2}$	69.508	384.46
$\frac{1}{2}$	32.987	86.590	$\frac{1}{2}$	51.051	207.39	$\frac{1}{2}$	69.900	388.82
$\frac{1}{2}$	33.379	88.664	$\frac{1}{2}$	51.444	210.60	$\frac{1}{2}$	70.293	393.20
$\frac{1}{2}$	33.772	90.763	$\frac{1}{2}$	51.836	213.82	$\frac{1}{2}$	70.686	397.61
$\frac{1}{2}$	34.165	92.886	$\frac{1}{2}$	52.229	217.08	$\frac{1}{2}$	71.079	402.04
11	34.558	95.033	$\frac{1}{2}$	52.622	220.35	$\frac{1}{2}$	71.471	406.49
$\frac{1}{2}$	34.950	97.205	$\frac{1}{2}$	53.014	223.65	23	71.864	410.97
$\frac{1}{2}$	35.343	99.402	$\frac{1}{2}$	53.407	226.98	$\frac{1}{2}$	72.257	415.48
$\frac{1}{2}$	35.736	101.62	$\frac{1}{2}$	53.800	230.33	$\frac{1}{2}$	72.649	420.00
$\frac{1}{2}$	36.128	103.87	$\frac{1}{2}$	54.192	233.71	$\frac{1}{2}$	73.042	424.56
$\frac{1}{2}$	36.521	106.14	$\frac{1}{2}$	54.585	237.10	$\frac{1}{2}$	73.435	429.13
$\frac{1}{2}$	36.914	108.43	$\frac{1}{2}$	54.978	240.53	$\frac{1}{2}$	73.827	433.74
$\frac{1}{2}$	37.306	110.75	$\frac{1}{2}$	55.371	243.98	$\frac{1}{2}$	74.220	438.36
12	37.699	113.10	$\frac{1}{2}$	55.763	247.45	$\frac{1}{2}$	74.613	443.01
$\frac{1}{2}$	38.092	115.47	$\frac{1}{2}$	56.156	250.95	$\frac{1}{2}$	75.006	447.69
$\frac{1}{2}$	38.485	117.86	18	56.549	254.47	24	75.398	452.39
$\frac{1}{2}$	38.877	120.28	$\frac{1}{2}$	56.941	258.02	$\frac{1}{2}$	75.791	457.11
$\frac{1}{2}$	39.270	122.72	$\frac{1}{2}$	57.334	261.59	$\frac{1}{2}$	76.184	461.86
$\frac{1}{2}$	39.663	125.19	$\frac{1}{2}$	57.727	265.18	$\frac{1}{2}$	76.576	466.64
$\frac{1}{2}$	40.055	127.68	$\frac{1}{2}$	58.119	268.80	$\frac{1}{2}$	76.969	471.44
$\frac{1}{2}$	40.448	130.19	$\frac{1}{2}$	58.512	272.45	$\frac{1}{2}$	77.362	476.26
13	40.841	132.73	$\frac{1}{2}$	58.905	276.12	$\frac{1}{2}$	77.754	481.11
$\frac{1}{2}$	41.233	135.30	$\frac{1}{2}$	59.298	279.81	$\frac{1}{2}$	78.147	485.98
$\frac{1}{2}$	41.626	137.89	19	59.690	283.53	25	78.540	490.87
$\frac{1}{2}$	42.019	140.50	$\frac{1}{2}$	60.083	287.27	$\frac{1}{2}$	78.933	495.79
$\frac{1}{2}$	42.412	143.14	$\frac{1}{2}$	60.476	291.04	$\frac{1}{2}$	79.325	500.74
$\frac{1}{2}$	42.804	145.80	$\frac{1}{2}$	60.868	294.83	$\frac{1}{2}$	79.718	505.71
$\frac{1}{2}$	43.197	148.49	$\frac{1}{2}$	61.261	298.65	$\frac{1}{2}$	80.111	510.71
$\frac{1}{2}$	43.590	151.20	$\frac{1}{2}$	61.654	302.49	$\frac{1}{2}$	80.503	515.72
14	43.982	153.94	$\frac{1}{2}$	62.046	306.35	$\frac{1}{2}$	80.896	520.77
$\frac{1}{2}$	44.375	156.70	20	62.439	310.24	26	81.289	525.84
$\frac{1}{2}$	44.768	159.48	$\frac{1}{2}$	62.832	314.16	$\frac{1}{2}$	81.681	530.93
$\frac{1}{2}$	45.160	162.30	$\frac{1}{2}$	63.225	318.10	$\frac{1}{2}$	82.074	536.05
$\frac{1}{2}$	45.553	165.13	$\frac{1}{2}$	63.617	322.06	$\frac{1}{2}$	82.467	541.19
$\frac{1}{2}$	45.946	167.99	$\frac{1}{2}$	64.010	326.05	$\frac{1}{2}$	82.860	546.35
$\frac{1}{2}$	46.338	170.87	$\frac{1}{2}$	64.403	330.06	$\frac{1}{2}$	83.252	551.55
$\frac{1}{2}$	46.731	173.78	$\frac{1}{2}$	64.795	334.10	$\frac{1}{2}$	83.645	556.76
15	47.124	176.71	$\frac{1}{2}$	65.188	338.16	$\frac{1}{2}$	84.038	562.00
$\frac{1}{2}$	47.517	179.67	$\frac{1}{2}$	65.581	342.25	$\frac{1}{2}$	84.430	567.27
$\frac{1}{2}$	47.909	182.65	21	65.973	346.36	27	84.823	572.56
$\frac{1}{2}$	48.302	185.66	$\frac{1}{2}$	66.366	350.50	$\frac{1}{2}$	85.216	577.87
$\frac{1}{2}$	48.695	188.69	$\frac{1}{2}$	66.759	354.66	$\frac{1}{2}$	85.608	583.21
$\frac{1}{2}$	49.087	191.75	$\frac{1}{2}$	67.152	358.84	$\frac{1}{2}$	86.001	588.57
			$\frac{1}{2}$	67.544	363.05	$\frac{1}{2}$	86.394	593.96
			$\frac{1}{2}$	67.937	367.28	$\frac{1}{2}$	86.786	599.37

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Circumferences and Areas of Circles (Continued)

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
27 $\frac{1}{2}$	87.179	604.81	33 $\frac{1}{2}$	105.636	888.00	39 $\frac{1}{2}$	124.486	1233.2
$\frac{1}{4}$	87.572	610.27	$\frac{1}{4}$	106.029	894.62	$\frac{1}{4}$	124.878	1241.0
28	87.965	615.75	$\frac{1}{4}$	106.421	901.26	$\frac{1}{4}$	125.271	1248.8
$\frac{1}{4}$	88.357	621.26	34	106.814	907.92	40	125.664	1256.6
$\frac{1}{4}$	88.750	626.80	$\frac{1}{4}$	107.207	914.61	$\frac{1}{4}$	126.056	1264.5
$\frac{1}{4}$	89.143	632.36	$\frac{1}{4}$	107.600	921.32	$\frac{1}{4}$	126.449	1272.4
$\frac{1}{4}$	89.535	637.94	$\frac{1}{4}$	107.992	928.06	$\frac{1}{4}$	126.842	1280.3
$\frac{1}{4}$	89.928	643.55	$\frac{1}{4}$	108.385	934.82	$\frac{1}{4}$	127.235	1288.2
$\frac{1}{4}$	90.321	649.18	$\frac{1}{4}$	108.778	941.61	$\frac{1}{4}$	127.627	1296.2
$\frac{1}{4}$	90.713	654.84	$\frac{1}{4}$	109.170	948.42	$\frac{1}{4}$	128.020	1304.2
29	91.106	660.52	$\frac{1}{4}$	109.563	955.25	$\frac{1}{4}$	128.413	1312.2
$\frac{1}{4}$	91.499	666.23	35	109.956	962.11	41	128.805	1320.3
$\frac{1}{4}$	91.892	671.96	$\frac{1}{4}$	110.348	969.00	$\frac{1}{4}$	129.198	1328.3
$\frac{1}{4}$	92.284	677.71	$\frac{1}{4}$	110.741	975.91	$\frac{1}{4}$	129.591	1336.4
$\frac{1}{4}$	92.677	683.49	$\frac{1}{4}$	111.134	982.84	$\frac{1}{4}$	129.983	1344.5
$\frac{1}{4}$	93.070	689.30	$\frac{1}{4}$	111.527	989.80	$\frac{1}{4}$	130.376	1352.7
$\frac{1}{4}$	93.462	695.13	$\frac{1}{4}$	111.919	996.78	$\frac{1}{4}$	130.769	1360.8
$\frac{1}{4}$	93.855	700.98	$\frac{1}{4}$	112.312	1003.8	$\frac{1}{4}$	131.161	1369.0
30	94.248	706.86	$\frac{1}{4}$	112.705	1010.8	$\frac{1}{4}$	131.554	1377.2
$\frac{1}{4}$	94.640	712.76	36	113.097	1017.9	42	131.947	1385.4
$\frac{1}{4}$	95.033	718.69	$\frac{1}{4}$	113.490	1025.0	$\frac{1}{4}$	132.340	1393.7
$\frac{1}{4}$	95.426	724.64	$\frac{1}{4}$	113.883	1032.1	$\frac{1}{4}$	132.732	1402.0
$\frac{1}{4}$	95.819	730.62	$\frac{1}{4}$	114.275	1039.2	$\frac{1}{4}$	133.125	1410.3
$\frac{1}{4}$	96.211	736.62	$\frac{1}{4}$	114.668	1046.3	$\frac{1}{4}$	133.518	1418.6
$\frac{1}{4}$	96.604	742.64	$\frac{1}{4}$	115.061	1053.5	$\frac{1}{4}$	133.910	1427.0
$\frac{1}{4}$	96.997	748.69	$\frac{1}{4}$	115.454	1060.7	$\frac{1}{4}$	134.303	1435.4
31	97.389	754.77	$\frac{1}{4}$	115.846	1068.0	$\frac{1}{4}$	134.696	1443.8
$\frac{1}{4}$	97.782	760.87	37	116.239	1075.2	43	135.088	1452.2
$\frac{1}{4}$	98.175	766.99	$\frac{1}{4}$	116.632	1082.5	$\frac{1}{4}$	135.481	1460.7
$\frac{1}{4}$	98.567	773.14	$\frac{1}{4}$	117.024	1089.8	$\frac{1}{4}$	135.874	1469.1
$\frac{1}{4}$	98.960	779.31	$\frac{1}{4}$	117.417	1097.1	$\frac{1}{4}$	136.267	1477.6
$\frac{1}{4}$	99.353	785.51	$\frac{1}{4}$	117.810	1104.5	$\frac{1}{4}$	136.659	1486.2
$\frac{1}{4}$	99.746	791.73	$\frac{1}{4}$	118.202	1111.8	$\frac{1}{4}$	137.052	1494.7
$\frac{1}{4}$	100.138	797.98	$\frac{1}{4}$	118.596	1119.2	$\frac{1}{4}$	137.445	1503.3
32	100.531	804.25	$\frac{1}{4}$	118.988	1126.7	$\frac{1}{4}$	137.837	1511.9
$\frac{1}{4}$	100.924	810.54	38	119.381	1134.1	44	138.230	1520.5
$\frac{1}{4}$	101.316	816.86	$\frac{1}{4}$	119.773	1141.6	$\frac{1}{4}$	138.623	1529.2
$\frac{1}{4}$	101.709	823.21	$\frac{1}{4}$	120.166	1149.1	$\frac{1}{4}$	139.015	1537.9
$\frac{1}{4}$	102.102	829.58	$\frac{1}{4}$	120.559	1156.6	$\frac{1}{4}$	139.408	1546.6
$\frac{1}{4}$	102.494	835.97	$\frac{1}{4}$	120.951	1164.2	$\frac{1}{4}$	139.801	1555.3
$\frac{1}{4}$	102.887	842.39	$\frac{1}{4}$	121.344	1171.7	$\frac{1}{4}$	140.194	1564.0
$\frac{1}{4}$	103.280	848.83	$\frac{1}{4}$	121.737	1179.3	$\frac{1}{4}$	140.586	1572.8
$\frac{1}{4}$	103.673	855.30	$\frac{1}{4}$	122.129	1186.9	$\frac{1}{4}$	140.979	1581.6
33	104.065	861.79	39	122.522	1194.6	45	141.372	1590.4
$\frac{1}{4}$	104.458	868.31	$\frac{1}{4}$	122.915	1202.3	$\frac{1}{4}$	141.764	1599.3
$\frac{1}{4}$	104.851	874.85	$\frac{1}{4}$	123.308	1210.0	$\frac{1}{4}$	142.157	1608.2
$\frac{1}{4}$	105.243	881.41	$\frac{1}{4}$	123.700	1217.7	$\frac{1}{4}$	142.550	1617.0
			$\frac{1}{4}$	124.093	1225.4	$\frac{1}{4}$	142.942	1626.0
						$\frac{1}{4}$	143.335	1634.9

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Circumferences and Areas of Circles

Diam.	Circum.	Area	Diam.	Circum.	Area	Diam.	Circum.	Area
45 $\frac{1}{2}$	143.728	1643.9	51 $\frac{1}{2}$	162.185	2093.2	57 $\frac{1}{2}$	180.249	2585.4
$\frac{1}{4}$	144.121	1652.9	$\frac{1}{4}$	162.577	2103.3	$\frac{1}{4}$	180.642	2596.7
46	144.513	1661.9	$\frac{1}{4}$	162.970	2113.5	$\frac{1}{4}$	181.034	2608.0
$\frac{1}{2}$	144.906	1670.9	52	163.363	2123.7	$\frac{1}{2}$	181.427	2619.4
$\frac{3}{4}$	145.299	1680.0	$\frac{1}{2}$	163.756	2133.9	$\frac{3}{4}$	181.820	2630.7
$\frac{1}{2}$	145.691	1689.1	$\frac{1}{2}$	164.148	2144.2	58	182.212	2642.1
$\frac{1}{4}$	146.084	1698.2	$\frac{1}{4}$	164.541	2154.5	$\frac{1}{4}$	182.605	2653.5
$\frac{1}{4}$	146.477	1707.4	$\frac{1}{4}$	164.934	2164.8	$\frac{1}{4}$	182.998	2664.9
$\frac{1}{4}$	146.869	1716.5	$\frac{1}{4}$	165.326	2175.1	$\frac{1}{4}$	183.390	2676.4
$\frac{1}{2}$	147.262	1725.7	$\frac{1}{2}$	165.719	2185.4	$\frac{1}{2}$	183.783	2687.8
47	147.655	1734.9	$\frac{1}{2}$	166.112	2195.8	$\frac{1}{2}$	184.176	2699.3
$\frac{1}{4}$	148.048	1744.2	53	166.504	2206.2	$\frac{1}{4}$	184.569	2710.9
$\frac{1}{4}$	148.440	1753.5	$\frac{1}{4}$	166.897	2216.6	$\frac{1}{4}$	184.961	2722.4
$\frac{1}{4}$	148.833	1762.7	$\frac{1}{4}$	167.290	2227.0	59	185.354	2734.0
$\frac{1}{4}$	149.226	1772.1	$\frac{1}{4}$	167.683	2237.5	$\frac{1}{4}$	185.747	2745.6
$\frac{1}{2}$	149.618	1781.4	$\frac{1}{2}$	168.075	2248.0	$\frac{1}{2}$	186.139	2757.2
$\frac{3}{4}$	150.011	1790.8	$\frac{3}{4}$	168.468	2258.5	$\frac{3}{4}$	186.532	2768.8
$\frac{1}{2}$	150.404	1800.1	$\frac{1}{2}$	168.861	2269.1	$\frac{1}{2}$	186.925	2780.5
48	150.796	1809.6	$\frac{1}{2}$	169.253	2279.6	$\frac{1}{2}$	187.317	2792.2
$\frac{1}{4}$	151.189	1819.0	54	169.646	2290.2	$\frac{1}{4}$	187.710	2803.9
$\frac{1}{4}$	151.582	1828.5	$\frac{1}{4}$	170.039	2300.8	$\frac{1}{4}$	188.103	2815.7
$\frac{1}{4}$	151.975	1837.9	$\frac{1}{4}$	170.431	2311.5	60	188.496	2827.4
$\frac{1}{4}$	152.367	1847.5	$\frac{1}{4}$	170.824	2322.1	$\frac{1}{4}$	188.888	2839.2
$\frac{1}{4}$	152.760	1857.0	$\frac{1}{4}$	171.217	2332.8	$\frac{1}{4}$	189.281	2851.0
$\frac{1}{2}$	153.153	1866.5	$\frac{1}{2}$	171.609	2343.5	$\frac{1}{2}$	189.674	2862.9
$\frac{3}{4}$	153.545	1876.1	$\frac{3}{4}$	172.002	2354.3	$\frac{3}{4}$	190.066	2874.8
49	153.938	1885.7	$\frac{1}{2}$	172.395	2365.0	$\frac{1}{2}$	190.459	2886.6
$\frac{1}{4}$	154.331	1895.4	55	172.788	2375.8	$\frac{1}{4}$	190.852	2898.6
$\frac{1}{4}$	154.723	1905.0	$\frac{1}{4}$	173.180	2386.6	$\frac{1}{4}$	191.244	2910.5
$\frac{1}{4}$	155.116	1914.7	$\frac{1}{4}$	173.573	2397.5	61	191.637	2922.5
$\frac{1}{2}$	155.509	1924.4	$\frac{1}{2}$	173.966	2408.3	$\frac{1}{2}$	192.030	2934.5
$\frac{3}{4}$	155.902	1934.2	$\frac{3}{4}$	174.358	2419.2	$\frac{3}{4}$	192.423	2946.5
$\frac{1}{2}$	156.294	1943.9	$\frac{1}{2}$	174.751	2430.1	$\frac{1}{2}$	192.815	2958.5
50	156.687	1953.7	$\frac{1}{2}$	175.144	2441.1	$\frac{1}{2}$	193.208	2970.6
$\frac{1}{4}$	157.080	1963.5	$\frac{1}{4}$	175.536	2452.0	$\frac{1}{4}$	193.601	2982.7
$\frac{1}{4}$	157.472	1973.3	56	175.929	2463.0	$\frac{1}{4}$	193.993	2994.8
$\frac{1}{4}$	157.865	1983.2	$\frac{1}{4}$	176.322	2474.0	$\frac{1}{4}$	194.386	3006.9
$\frac{1}{4}$	158.258	1993.1	$\frac{1}{4}$	176.715	2485.0	62	194.779	3019.1
$\frac{1}{4}$	158.650	2003.0	$\frac{1}{4}$	177.107	2496.1	$\frac{1}{4}$	195.171	3031.3
$\frac{1}{2}$	159.043	2012.9	$\frac{1}{2}$	177.500	2507.2	$\frac{1}{2}$	195.564	3043.5
$\frac{3}{4}$	159.426	2022.8	$\frac{3}{4}$	177.893	2518.3	$\frac{3}{4}$	195.957	3055.7
51	159.829	2032.8	$\frac{1}{2}$	178.285	2529.4	$\frac{1}{2}$	196.350	3068.0
$\frac{1}{4}$	160.221	2042.8	$\frac{1}{4}$	178.678	2540.6	$\frac{1}{4}$	196.742	3080.3
$\frac{1}{4}$	160.614	2052.8	$\frac{1}{4}$	179.071	2551.8	$\frac{1}{4}$	197.135	3092.6
$\frac{1}{4}$	161.007	2062.9	57	179.463	2563.0	$\frac{1}{4}$	197.528	3104.9
$\frac{1}{4}$	161.399	2073.0	$\frac{1}{4}$	179.856	2574.2	63	197.920	3117.2
$\frac{1}{4}$	161.792	2083.1						

For diameters not listed in the tables, figure from the following:

Circumference = diameter $\times$ 3.1416.

Area = $r^2\pi = r^2 \times 3.1416$, but when diameter, D , is known it is figured from diameter:

Area = $D^2 \times 0.7854$.

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Table for Division of Circles

Length of chord for angle $\alpha = 2r \sin \frac{\alpha}{2}$ Table is figured for r (being the radius of the circle) = 1. For other values of r , multiply by r .

Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)	Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)
3	120 deg.	1.73206	42	8 deg. 34 min.	0.14938
4	90 deg.	1.41422	43	8 deg. 22 min.	0.1459
5	72 deg.	1.17558	44	8 deg. 10 min.	0.14242
6	60 deg.	1	45	8 deg.	0.13952
7	51 deg. 25 min.	0.86732	46	7 deg. 49 min.	0.13603
8	45 deg.	0.76536	47	7 deg. 39 min.	0.133128
9	40 deg.	0.68404	48	7 deg. 30 min.	0.130806
10	36 deg.	0.61804	49	7 deg. 20 min.	0.127904
11	32 deg. 43 min.	0.563	50	7 deg. 12 min.	0.125582
12	30 deg.	0.51764	51	7 deg. 3 min.	0.122678
13	27 deg.	0.4782	52	6 deg. 55 min.	0.120356
14	25 deg.	0.4448	53	6 deg. 47 min.	0.118032
15	24 deg.	0.41582	54	6 deg. 40 min.	0.11629
16	22 deg. 30 min.	0.39018	55	6 deg. 32 min.	0.113966
17	21 deg. 10 min.	0.36734	56	6 deg. 25 min.	0.111644
18	20 deg.	0.3473	57	6 deg. 18 min.	0.1099
19	18 deg. 56 min.	0.32894	58	6 deg. 12 min.	0.108158
20	18 deg.	0.31286	59	6 deg. 06 min.	0.106414
21	17 deg. 08 min.	0.29792	60	6 deg.	0.104672
22	16 deg. 21 min.	0.2841	61	5 deg. 54 min.	0.102928
23	15 deg. 39 min.	0.272	62	5 deg. 48 min.	0.101186
24	15 deg.	0.26106	63	5 deg. 42 min.	0.099442
25	14 deg. 24 min.	0.25066	64	5 deg. 37 min.	0.0977
26	13 deg. 50 min.	0.24086	65	5 deg. 32 min.	0.096538
27	13 deg. 20 min.	0.23218	66	5 deg. 27 min.	0.094794
28	12 deg. 51 min.	0.22352	67	5 deg. 22 min.	0.093632
29	12 deg. 24 min.	0.216	68	5 deg. 17 min.	0.091888
30	12 deg.	0.20906	69	5 deg. 13 min.	0.090765
31	11 deg. 36 min.	0.20212	70	5 deg. 8 min.	0.089564
32	11 deg. 15 min.	0.19574	71	5 deg. 4 min.	0.088402
33	10 deg. 54 min.	0.18996	72	5 deg.	0.087238
34	10 deg. 35 min.	0.18416	73	4 deg. 55 min.	0.085496
35	10 deg. 17 min.	0.17894	74	4 deg. 51 min.	0.084332
36	10 deg.	0.17432	75	4 deg. 48 min.	0.083752
37	9 deg. 43 min.	0.1691	76	4 deg. 44 min.	0.083588
38	9 deg. 28 min.	0.16504	77	4 deg. 40 min.	0.081426
39	9 deg. 13 min.	0.1604	78	4 deg. 36 min.	0.080264
40	9 deg.	0.15692	79	4 deg. 33 min.	0.0791
41	8 deg. 46 min.	0.15286	80	4 deg. 30 min.	0.078518

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Table for Division of Circle

Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)	Number of Divisions in Circumference	Angle of Each Division in Degrees and Minutes	Length of Chord for Each Division (for Radius = 1)
81	4 deg. 26 min.	0.077356	91	3 deg. 57 min.	0.0686362
82	4 deg. 23 min.	0.076194	92	3 deg. 54 min.	0.0680546
83	4 deg. 20 min.	0.075612	93	3 deg. 52 min.	0.0674732
84	4 deg. 17 min.	0.07445	94	3 deg. 49 min.	0.0663104
85	4 deg. 14 min.	0.073868	95	3 deg. 47 min.	0.0657288
86	4 deg. 11 min.	0.072706	96	3 deg. 45 min.	0.0651474
87	4 deg. 8 min.	0.072124	97	3 deg. 42 min.	0.064566
88	4 deg. 5 min.	0.070962	98	3 deg. 40 min.	0.0639844
89	4 deg. 2 min.	0.07038	99	3 deg. 38 min.	0.063403
90	4 deg.	0.069798	100	3 deg. 36 min.	0.0628216

This table should be useful for gear and chain wheel calculation and design.

$$\text{Length of arc of } a \text{ degrees} = 2\pi \frac{a}{360} = \frac{d\pi a}{360}$$

$$\text{Area of sector of } a \text{ degrees} = r^2 \pi \frac{a}{360} = \frac{d^2 \times 0.7854 a^2}{360}$$

Decimal Equivalents of Sixty-Fourths

To convert common fraction into decimal fraction, give the numerator decimal form by adding a period and ciphers. Then divide by denominator.

$\frac{1}{64} = .0156$	$\frac{17}{64} = .2656$	$\frac{33}{64} = .5156$	$\frac{49}{64} = .7656$
$\frac{2}{64} = .0312$	$\frac{18}{64} = .2812$	$\frac{34}{64} = .5312$	$\frac{50}{64} = .7812$
$\frac{3}{64} = .0468$	$\frac{19}{64} = .2968$	$\frac{35}{64} = .5468$	$\frac{51}{64} = .7968$
$\frac{5}{64} = .0625$	$\frac{21}{64} = .3125$	$\frac{37}{64} = .5625$	$\frac{53}{64} = .8125$
$\frac{6}{64} = .0781$	$\frac{22}{64} = .3281$	$\frac{38}{64} = .5781$	$\frac{54}{64} = .8281$
$\frac{7}{64} = .0937$	$\frac{23}{64} = .3437$	$\frac{39}{64} = .5937$	$\frac{55}{64} = .8437$
$\frac{9}{64} = .1093$	$\frac{25}{64} = .3593$	$\frac{41}{64} = .6093$	$\frac{57}{64} = .8593$
$\frac{10}{64} = .1250$	$\frac{26}{64} = .3750$	$\frac{42}{64} = .6250$	$\frac{58}{64} = .8750$
$\frac{11}{64} = .1406$	$\frac{27}{64} = .3906$	$\frac{43}{64} = .6406$	$\frac{59}{64} = .8906$
$\frac{13}{64} = .1562$	$\frac{29}{64} = .4062$	$\frac{45}{64} = .6562$	$\frac{61}{64} = .9062$
$\frac{14}{64} = .1718$	$\frac{30}{64} = .4218$	$\frac{46}{64} = .6718$	$\frac{62}{64} = .9218$
$\frac{15}{64} = .1875$	$\frac{31}{64} = .4375$	$\frac{47}{64} = .6875$	$\frac{63}{64} = .9375$
$\frac{17}{64} = .2031$	$\frac{33}{64} = .4531$	$\frac{49}{64} = .7031$	$\frac{65}{64} = .9531$
$\frac{18}{64} = .2187$	$\frac{34}{64} = .4687$	$\frac{50}{64} = .7187$	$\frac{66}{64} = .9687$
$\frac{19}{64} = .2343$	$\frac{35}{64} = .4843$	$\frac{51}{64} = .7343$	$\frac{67}{64} = .9843$
$\frac{1}{8} = .2500$	$\frac{1}{2} = .5000$	$\frac{3}{4} = .7500$	$1 = 1.0000$

Decimal Fractions of a Linear Inch in Millimetres

Inch	Millimetres	Inch	Millimetres	Inch	Millimetres	Inches	Millimetres
.01	.254	.29	7.366	.57	14.478	.85	21.590
.02	.508	.30	7.620	.58	14.732	.86	21.844
.03	.762	.31	7.874	.59	14.986	.87	22.098
.04	1.016	.32	8.128	.60	15.240	.88	22.352
.05	1.270	.33	8.382	.61	15.494	.89	22.606
.06	1.524	.34	8.636	.62	15.748	.90	22.860
.07	1.778	.35	8.890	.63	16.002	.91	23.114
.08	2.032	.36	9.144	.64	16.256	.92	23.368
.09	2.286	.37	9.398	.65	16.510	.93	23.622
.10	2.540	.38	9.652	.66	16.764	.94	23.876
.11	2.794	.39	9.906	.67	17.018	.95	24.130
.12	3.048	.40	10.160	.68	17.272	.96	24.384
.13	3.302	.41	10.414	.69	17.526	.97	24.638
.14	3.556	.42	10.668	.70	17.780	.98	24.892
.15	3.810	.43	10.922	.71	18.034	.99	25.146
.16	4.064	.44	11.176	.72	18.288	1.00	25.400
.17	4.318	.45	11.430	.73	18.542	2.00	50.799
.18	4.572	.46	11.684	.74	18.796	3.00	76.199
.19	4.826	.47	11.938	.75	19.050	4.00	101.598
.20	5.080	.48	12.192	.76	19.304	5.00	126.998
.21	5.334	.49	12.446	.77	19.558	6.00	152.397
.22	5.588	.50	12.700	.78	19.812	7.00	177.797
.23	5.842	.51	12.945	.79	20.066	8.00	203.196
.24	6.096	.52	13.208	.80	20.320	9.00	228.596
.25	6.350	.53	13.462	.81	20.574	10.00	253.995
.26	6.604	.54	13.716	.82	20.828	11.00	279.395
.27	6.858	.55	13.970	.83	21.082	12.00	304.794
.28	7.112	.56	14.224	.84	21.336	1 foot	

United States Official Millimeters Conversion Table

Millimeters	Equivalent in Inches	Millimeters	Equivalent in Inches
1	0.03937	51	2.00787
2	0.07874	52	2.04724
3	0.11811	53	2.08661
4	0.15748	54	2.12598
5	0.19685	55	2.16535
6	0.23622	56	2.20472
7	0.27559	57	2.24409
8	0.31496	58	2.28346
9	0.35433	59	2.32283
10	0.39370	60	2.36220
11	0.43307	61	2.40157
12	0.47244	62	2.44094
13	0.51181	63	2.48031
14	0.55118	64	2.51968
15	0.59055	65	2.55905
16	0.62992	66	2.59842
17	0.66929	67	2.63779
18	0.70866	68	2.67716
19	0.74803	69	2.71653
20	0.78740	70	2.75590
21	0.82677	71	2.79527
22	0.86614	72	2.83464
23	0.90551	73	2.87401
24	0.94488	74	2.91338
25	0.98425	75	2.95275
26	1.02362	76	2.99212
27	1.06299	77	3.03149
28	1.10236	78	3.07086
29	1.14173	79	3.11023
30	1.18110	80	3.14960
31	1.22047	81	3.18897
32	1.25984	82	3.22834
33	1.29921	83	3.26771
34	1.33858	84	3.30708
35	1.37795	85	3.34645
36	1.41732	86	3.38582
37	1.45669	87	3.42519
38	1.49606	88	3.46456
39	1.53543	89	3.50393
40	1.57480	90	3.54330
41	1.61417	91	3.58267
42	1.65354	92	3.62204
43	1.69291	93	3.66141
44	1.73228	94	3.70078
45	1.77165	95	3.74015
46	1.81102	96	3.77952
47	1.85039	97	3.81889
48	1.88976	98	3.85826
49	1.92913	99	3.89763
50	1.96850	100	3.93700

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Kilograms per Square Centimeter in Pounds per Square Inch and Vice Versa

To convert kilograms per square centimeter into pounds per square inch, multiply by 14.223. Oppositely, divide pounds per square inch by 14.223 to convert into kilograms per square centimeter.

Lbs. per Square Inch	Kilograms per Square Centimeter	Lbs. per Square Inch	Kilograms per Square Centimeter	Lbs. per Square Inch	Kilograms per Square Centimeter	Lbs. per Square Inch	Kilograms per Square Centimeter
1	.0703	41	2.8826	81	5.6949	205	14.4129
2	.1406	42	2.9529	82	5.7652	210	14.7645
3	.2109	43	3.0232	83	5.8355	215	15.1160
4	.2812	44	3.0935	84	5.9058	220	15.4675
5	.3515	45	3.1638	85	5.9761	225	15.8191
6	.4218	46	3.2341	86	6.0464	230	16.1706
7	.4921	47	3.3044	87	6.1167	235	16.5221
8	.5624	48	3.3747	88	6.1870	240	16.8737
9	.6328	49	3.4450	89	6.2573	245	17.2252
10	.7031	50	3.5153	90	6.3276	250	17.5767
11	.7734	51	3.5856	91	6.3979	255	17.9283
12	.8437	52	3.6559	92	6.4682	260	18.2798
13	.9140	53	3.7263	93	6.5385	265	18.6313
14	.9843	54	3.7966	94	6.6088	270	18.9829
15	1.0546	55	3.8669	95	6.6722	275	19.3344
16	1.1249	56	3.9372	96	6.7495	280	19.6860
17	1.1952	57	4.0075	97	6.8198	285	20.0375
18	1.2655	58	4.0778	98	6.8901	290	20.3890
19	1.3358	59	4.1481	99	6.9604	295	20.7406
20	1.4062	60	4.2184	100	7.0307	300	21.0921
21	1.4764	61	4.2887	105	7.3822	310	21.7951
22	1.5467	62	4.3590	110	7.7338	320	22.4981
23	1.6171	63	4.4293	115	8.0853	330	23.2012
24	1.6874	64	4.4996	120	8.4368	340	23.9043
25	1.7577	65	4.5699	125	8.7884	350	24.6073
26	1.8280	66	4.6402	130	9.1399	360	25.3104
27	1.8983	67	4.7106	135	9.4914	370	26.0135
28	1.9686	68	4.7809	140	9.8430	380	26.7166
29	2.0389	69	4.8512	145	10.1945	390	27.4196
30	2.1092	70	4.9215	150	10.5460	400	28.1227
31	2.1795	71	4.9918	155	10.8976	410	28.8258
32	2.2498	72	5.0621	160	11.2491	420	29.5288
33	2.3201	73	5.1324	165	11.6006	430	30.2319
34	2.3905	74	5.2027	170	11.9522	440	30.9350
35	2.4607	75	5.2730	175	12.3037	450	31.6380
36	2.5310	76	5.3433	180	12.6553	460	32.3411
37	2.6013	77	5.4136	185	13.0068	470	33.0442
38	2.6717	78	5.4939	190	13.3583	480	33.7473
39	2.7420	79	5.5542	195	13.7099	490	34.4503
40	2.8123	80	5.6246	200	14.0614	500	35.1533

Units of Weight and Measure

(From Circular No. 47 of Bureau of Standards, Department of Commerce, Washington)

THE METRIC SYSTEM: Metric units are naturally related. For example: 1 cubic decimeter equals for all practical purposes 1 liter, and 1 liter of water weighs 1 kilogram. The metric terms are formed by combining the words "metre," "gram" and "liter" with the six numerical prefixes, as in the following table:

Prefixes		Meaning		Units
milli-	= one-thousandth	$\frac{1}{1000}$	.001	"meter" for length
centi-	= one-hundredth	$\frac{1}{100}$	.01	
deci-	= one-tenth	$\frac{1}{10}$	.1	
Unit	= one		1	"gram" for weight or mass
deka-	= ten	$\frac{10}{1}$	10	
hecto-	= one hundred	$\frac{100}{1}$	100	
kilo	= one thousand	$\frac{1000}{1}$	1000	"liter" for capacity

Definitions of Units

The following lists of units include most of those in general use. Simple conversions may be made from the values here given more readily than from the "Simple and Compound Conversions of Weights, Measures and Money Values" on pages 1028 and 1029, and units not included in the latter may be found here and used. For example, if a conversion into nautical miles is wanted, the conversion factor for statute mile given in the conversion tables may be used by multiplying it by the factor 1.151 553 here given to show relation of nautical mile to statute mile.

LENGTH

FUNDAMENTAL UNITS

A meter (m) is a unit of length equivalent to the distance between the defining lines on the international prototype meter at the International Bureau of Weights and Measures when this standard is at the temperature of melting ice (0°C.). 1 m. = $\frac{3937}{1000}$ yd.

A yard (yd.) is a unit of length equivalent to $\frac{3600}{1000}$ of a meter.

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HIGHER AND LOWER UNITS

1 kilometer (km)	= 1000 meters.
1 hectometer (hm)	= 100 meters.
1 dekameter (dkm)	= 10 meters.
1 decimeter (dm)	= 0.1 meter.
1 centimeter (cm)	= 0.01 meter.
1 millimeter (mm)	= 0.001 meter = 0.1 centimeter.
1 micron (μ)	= 0.000 001 meter = 0.001 millimeter.
1 millimicron ($m\mu$)	= 0.000 000 001 meter = 0.001 micron.
1 foot (ft.)	= $\frac{1}{3}$ yard = $\frac{1200}{3217}$ meter.
1 inch (in.)	= $\frac{1}{36}$ yard = $\frac{1}{12}$ foot = $\frac{100}{3217}$ meter.
1 link (li.)	= 0.22 yard = 7.92 inches.
1 rod (rd.)	= 5 $\frac{1}{2}$ yards = 16 $\frac{1}{2}$ feet.
1 chain (ch.)	= 22 yards = 100 links = 66 feet = 4 rods.
1 furlong (fur.)	= 220 yards = 40 rods = 10 chains.
1 statute mile (mi.)	= 1760 yards = 5280 feet = 320 rods.
1 hand	= 4 inches.
1 point	= $\frac{1}{16}$ inch.
1 mil	= 0.001 inch.
1 fathom	= 6 feet.
1 span	= 9 inches = $\frac{3}{4}$ fathom.
1 nautical mile	} United States = 6080.20 feet = 1.151 553 statute miles = 1853.249 meters.
1 seal mile	
1 geographical mile	

AREA

FUNDAMENTAL UNITS

A square meter (m^2)	= 1.195985 sq. yd.
A square yard (sq. yd.)	= 0.8361307 m^2 .

HIGHER AND LOWER UNITS

1 square kilometer (km^2)	= 1 000 000 square meters.
1 hectare (ha) or square hectometer (hm^2)	= 10 000 square meters.
1 are (a), or square dekameter (dkm^2)	= 100 square meters.
1 centare (ca)	= 1 square meter.
1 square decimeter (dm^2)	= 0.01 square meter.
1 square centimeter (cm^2)	= 0.0001 square meter.
1 square millimeter (mm^2)	= 0.000 001 square meter = 0.01 square centimeter.
1 square foot (sq. ft.)	= $\frac{1}{9}$ square yard.
1 square inch (sq. in.)	= $\frac{1}{1296}$ square yard = $\frac{1}{64}$ square foot.
1 square link (sq. li.)	= 0.0484 square yard = 62.7264 square inches.
1 square rod (sq. rd.)	= 30.25 square yards = 272.25 square feet = 625 square links.
1 square chain (sq. ch.)	= 484 square yards = 16 square rods = 100 000 square links.
1 acre (A.)	= 4840 square yards = 160 square rods = 10 square chains.
1 square mile (sq. mi.)	= 3 097 600 square yards = 640 acres.

VOLUME

FUNDAMENTAL UNITS

A cubic meter (m^3)	= 1.307 9428 cu. yd.
A cubic yard (cu. yd.)	= 0.17645594 m^3 .

HIGHER AND LOWER UNITS

1 cubic kilometer (km^3)	= 1 000 000 000 cubic meters.
1 cubic hectometer (hm^3)	= 1 000 000 cubic meters.
1 cubic dekameter (dkm^3)	= 1000 cubic meters.
1 stere (s)	= 1 cubic meter
1 cubic decimeter (dm^3)	= 0.001 cubic meter.
1 cubic centimeter (cm^3)	= 0.000 001 cubic meter = 0.001 cubic decimeter.
1 cubic millimeter (mm^3)	= 0.000 000 001 cubic meter = 0.001 cubic centimeter.
1 cubic foot (cu. ft.)	= $\frac{1}{27}$ cubic yard.
1 cubic inch (cu. in.)	= $\frac{1}{1728}$ cubic yard = $\frac{1}{1728}$ cubic foot.
1 board foot	= 144 cubic inches $\frac{1}{12}$ = cubic foot.
1 cord (cd.)	= 128 cubic feet.

(Continued on following page)

CAPACITY

FUNDAMENTAL UNITS

A liter (l) is a unit of capacity equivalent to the volume occupied by the mass of 1 kilogram of pure water at its maximum density (at a temperature of 4° C. practically) and under the standard atmospheric pressure of 760 mm). It is equivalent in volume to 1.000 027 cubic decimeters. One l = 0.264168 gal.

A gallon (gal.) is a unit of capacity equivalent to the volume of 231 cubic inches. It is used for the measurement of liquid commodities only. 1 gal. = 3.785 332 liter. A British gallon is approximately 20 per cent larger.

A bushel (bu.) is a unit of capacity equivalent to the volume of 2150.42 cubic inches. It is used in the measurement of dry commodities only. The bushel is the so-called stricken or struck bushel. Many dry commodities are sold by heaped bushel, which is generally specified in the State Laws to be the usual stricken bushel measure "duly heaped in the form of a cone as high as the article will admit" or "heaped as high as may be without special effort or design." The heaped bushel was originally intended to be 25 per cent greater than the bushel. A British bushel is 3 per cent larger.

HIGHER AND LOWER UNITS

- 1 hectoliter (hl) = 100 liters.
- 1 dekaliter (dkl) = 10 liters.
- 1 deciliter (dl) = 0.1 liter.
- 1 centiliter (cl) = 0.01 liter.
- 1 milliliter (ml) = 0.001 liter = 1.000 027 cubic centimeters.
- 1 liquid quart (liq. qt.) = $\frac{1}{4}$ gallon = 57.75 cubic inches.
- 1 liquid pint (liq. pt.) = $\frac{1}{2}$ gallon = $\frac{1}{2}$ liquid quart = 28.875 cubic inches.
- 1 gill (gi.) = $\frac{1}{4}$ gallon = $\frac{1}{4}$ liquid pint = 7.21875 cubic inches.
- 1 fluid ounce (fl. oz.) = $\frac{1}{16}$ gallon = $\frac{1}{8}$ liquid pint.
- 1 fluid dram (fl. dr.) = $\frac{1}{8}$ fluid ounce = $\frac{1}{160}$ liquid pint.
- 1 minim (min. or m) = $\frac{1}{60}$ fluid dram = $\frac{1}{960}$ fluid ounce.
- 1 firkin = 9 gallons.
- 1 peck (pk.) = $\frac{1}{4}$ bushel = 537.605 cubic inches.
- 1 dry quart (dry qt.) = $\frac{1}{2}$ bushel = $\frac{1}{4}$ peck = 67.200 625 cubic inches.
- 1 dry pint (dry pt.) = $\frac{1}{4}$ bushel = $\frac{1}{2}$ dry quart = 33.600312 5 cubic inches.
- 1 barrel for fruit, vegetables and other dry commodities = 7056 cubic inches = 105 dry quarts. (By U. S. Statute, March 4, 1915.)

MASS OR WEIGHT

FUNDAMENTAL UNITS

A kilogram (kg) is a unit of mass equivalent to the mass of the international prototype kilogram at the International Bureau of Weights and Measures. One kg. = 2.204 622 341 lb. av.

An avoirdupois pound (lb. av.) = 0.453 592 427 7 kilogram.

A gram (g) is a unit of mass equivalent to one-thousandth of the mass of the international prototype kilogram at the International Bureau of Weights and Measures.

A troy pound (lb. t.) is a unit of mass equivalent to $\frac{5780}{1000}$ of that of the avoirdupois pound.

HIGHER AND LOWER UNITS

- 1 metric ton (t) = 1000 kilograms.
- 1 hectogram (hg) = 100 grams = 0.1 kilogram.
- 1 dekagram (dkg) = 10 grams = 0.01 kilogram.
- 1 decigram (dg) = 0.1 gram.
- 1 centigram (cg) = 0.01 gram.
- 1 milligram (mg) = 0.001 gram.
- 1 avoirdupois ounce (oz. av.) = $\frac{1}{16}$ avoirdupois pound.
- 1 avoirdupois dram (dr. av.) = $\frac{1}{16}$ avoirdupois pound = $\frac{1}{8}$ avoirdupois ounce.
- 1 grain (gr.) = $\frac{1}{7000}$ avoirdupois pound = $\frac{1}{480}$ avoirdupois ounce = $\frac{1}{6000}$ troy pound.
- 1 apothecaries' pound (lb. ap.) = 1 troy pound = $\frac{5780}{1000}$ avoirdupois pound.
- 1 apothecaries' or troy ounce (oz. ap. or $\mathfrak{z}$, or oz. t.) = $\frac{1}{2}$ troy pound = $\frac{480}{1000}$ avoirdupois pound = 480 grains.
- 1 apothecaries' dram (dr. ap. or $\mathfrak{d}$) = $\frac{1}{8}$ apothecaries' pound = $\frac{1}{4}$ apothecaries' ounce = 60 grains.
- 1 pennyweight (dwt.) = $\frac{1}{20}$ troy ounce = 24 grains.
- 1 apothecaries' scruple (s. ap. or $\mathfrak{s}$) = $\frac{1}{4}$ apothecaries' dram = 20 grains.
- 1 metric carat (c) = 200 milligrams = 0.2 gram.
- The old carat in use in this country previous to July 1, 1913, was of 205.3 milligrams.
- 1 short hundredweight (sh. cwt.) = 100 avoirdupois pounds.
- 1 long hundredweight (l. cwt.) = 112 avoirdupois pounds.
- 1 short ton (sh. tn.) = 2000 avoirdupois pounds.
- 1 long ton (l. tn.) = 2240 avoirdupois pounds.

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Spelling and Abbreviation of Units

Following the names of each unit in the list below is given the abbreviation which the Bureau has adopted. Attention is particularly called to the following principles:

1. The period is omitted after the abbreviations of the metric units, while it is used after those of the customary system.

2. The exponents "2" and "3" are used to signify area and volume, respectively, in the case of the metric units instead of the longer prefixes "sq" or "cu." In conformity with this principle the abbreviation for cubic centimeter is "cm³," instead of "c.c." or "c.m." The term "cubic centimeter" as used in chemical work is, in fact, a misnomer, since the unit actually used is the "milliliter," which has a slightly larger volume.

3. The use of the same abbreviation for both singular and plural is recommended. This practice is already established in expressing metric units and is in accordance with the spirit and chief purpose of abbreviations.

4. It is also suggested that, unless all the text is printed in capital letters, only small letters be used for abbreviations except in the case of A. for acre, where the use of the capital letter is general.

ABBREVIATIONS FOR TERMS OF WEIGHT AND MEASURE

Unit	Abbreviation	Unit	Abbreviation	Unit	Abbreviation
acre.....	A.	dram, avoirdupois.....	dr. av.	ounce, avoirdupois.....	oz. av.
are.....	a	dram, fluid.....	fl. dr.	ounce, fluid.....	fl. oz.
avoirdupois.....	av.	fathom.....	fath.	ounce, troy.....	oz. t.
barrel.....	bbl.	foot.....	ft.	peck.....	pk.
board foot.....	bd. ft.	firkin.....	fir.	pennyweight.....	dwt.
bushel.....	bu.	furlong.....	fur.	pint.....	pt.
carat, metric.....	c	gallon.....	gal.	pound.....	lb.
centare.....	ca	grain.....	gr.	pound, apothecaries'.....	lb. ap.
centigram.....	cg	gram.....	g.	pound, avoirdupois.....	lb. av.
centiliter.....	cl	hectare.....	ha	pound, troy.....	lb. t.
centimeter.....	cm	hectogram.....	hg	quart.....	qt.
chain.....	ch.	hectoliter.....	hl	rod.....	rd.
cubic centimeter.....	cm ³	hectometer.....	hm	scruple, apothecaries'.....	s.ap. or ʒ
cubic decimeter.....	dm ³	hoghead.....	hhd.	square centimeter.....	cm ²
cubic dekameter.....	dkm ³	hundredweight.....	cwt.	square chain.....	sq. ch.
cubic foot.....	cu. ft.	inch.....	in.	square decimeter.....	dm ²
cubic hectometer.....	hm ³	kilogram.....	kg	square dekameter.....	dkm ²
cubic inch.....	cu. in.	kiloliter.....	kl	square foot.....	sq. ft.
cubic kilometer.....	km ³	kilometer.....	km	square hectometer.....	hm ²
cubic meter.....	m ³	link.....	li.	square inch.....	sq. in.
cubic mile.....	cu. mi.	liquid.....	liq.	square kilometer.....	km ²
cubic millimeter.....	mm ³	liter.....	l	square meter.....	m ²
cubic yard.....	cu. yd.	meter.....	m	square mile.....	sq. mi.
decigram.....	dg	metric ton.....	t	square millimeter.....	mm ²
deciliter.....	dl	micron.....	μ	square rod.....	sq. rd.
decimeter.....	dm	mile.....	mi.	square yard.....	sq. yd.
decistere.....	ds	milligram.....	mg	stere.....	s
dekagram.....	dkg	milliliter.....	ml	ton.....	tn.
dekaliter.....	dkl	millimeter.....	mm	ton, metric.....	t
dekameter.....	dkm	micromicron.....	μμ	troy.....	t.
dekastere.....	dks	minim.....	min. or m̄	yard.....	yd.
dram, apothecaries'.....	dr. ap. or ʒ	ounce.....	oz.		
		ounce, apothecaries'.....	oz. ap. or ʒ		

Simple and Compound Conversions of Weights, Measures and Money Values

By MARIUS C. KRARUP

The figures in the conversion tables on page 1029 are taken from Circular No. 47 of the Bureau of Standards, Department of Commerce, Washington, D. C. The special arrangement of the figures is devised so that users of this **AUTOMOBILE DIRECTORY** may have in one place all the data required for simple and compound conversions, no other figuring being necessary than simple multiplication and division (though logarithms can be used to advantage if desired). The underlying idea is that it is usually much easier to figure a little than to find a table of equivalents in which the figuring is done. Also, that tables for compound conversions include only a few of the numerous compound conversions that may be demanded, and that all tables of ready-figured values leave gaps which must be figured anyway.

In the appended tables a conversion figure is established for every unit, and by this simple means all conversions become possible from very few data.

(Rule for multiplying with decimals: If one factor has m decimals and the other factor has n decimals, multiply without regard for decimal point and place it in the product $m+n$ places from the right.)

(Rule for division with decimals: If divisor has m decimals, move decimal point m places to the right in both figures. Place decimal point in quotient when it is reached in the division.)

For most practical purposes, the decimals may be cut down to three or four, greatly abbreviating the figuring.

HOW TO USE THE CONVERSION TABLES

For a simple conversion such as: How many bushels are 606 hectoliters? We have

$$x \text{ bushels} = 606 \text{ hectoliters}$$

For bushels and hectoliters substitute their conversion figure. Then we have

$$\begin{aligned} x \times 35.2383 &= 606 \times 100 \text{ and} \\ 60600 \\ x &= \frac{60600}{35.2383} = 1719.718 \text{ bushels} \end{aligned}$$

Example: How many kilograms does 4 liters weigh when 0.3 liquid quart weighs 7 lb. av.?

We have the ordinary equation by "rule of three" that

$$\begin{array}{ccc} \times \text{ kg.} & 7 \text{ lb. av.} & \\ 4 \text{ liters} & 0.3 \text{ qt.} & \end{array}$$

Now the simple rule is: Replace the names of the units by their respective conversion factors. The above equation then becomes:

$$\begin{aligned} \frac{x \times 1}{4 \times 1} &= \frac{7 \times 0.4535924277}{0.3 \times 0.946333} \\ \text{or, simplified by cutting down the decimals:} \\ \frac{x}{4} &= \frac{7 \times 0.45359}{0.3 \times 0.94633} \text{ or } x \text{ (kg.)} = \frac{4 \times 7 \times 0.45359}{0.3 \times 0.94633} = 44.735 \text{ kg.} \end{aligned}$$

Example 2: If 4 British gallons cost 2£ 7 sh., what is 5 gallons worth in American money? We have

$$\begin{array}{ccc} x \text{ dollars} & 2£ 7 \text{ sh.} & \\ 5 \text{ gal.} & 4 \text{ British gal.} & \end{array}$$

We do not find British gallons in the conversion tables, but by looking under "Units of Weight and Measure" on page 1196 we see that a British gallon is 20 per cent larger than the American gallon. So for "British" we use the factor 1.20. The equation then becomes:

$$\begin{aligned} \frac{x \times 1}{5 \times 3.785332} &= \frac{(2 \times 4.8665) + (7 \times 0.2433)}{4 \times 1.20 \times 3.785332} \\ \text{or, simplified by crossing out the repeated conversion factor for "gallon":} \\ \frac{x}{5} &= \frac{(2 \times 4.8665) + (7 \times 0.2433)}{4 \times 1.20} \\ \text{and } x \text{ dollars} &= \frac{48.665 + (35 \times 0.2433)}{4.80} = \$11.91 \end{aligned}$$

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Conversion Tables

See page 1028 for directions in using these tables for simple or compound conversions.

Length			Capacity, Dry		
Units		Meters	Units		Liters
1 inch	=	0.025 400 05	1 dry pint	=	0.550 599
1 link	=	0.201 168 4	1 dry quart	=	1.101 198
1 foot	=	0.304 800 6	1 peck	=	8.809 58
1 yard	=	0.914 401 8	1 bushel	=	35.2383
1 rod	=	5.029 210	1 liter	=	1
1 chain	=	20.116 84	1 dekaliter	=	10
1 mile	=	1609.3472	1 cubic inch	=	0.016 3867
1 centimeter	=	0.01			
1 meter	=	1			

Area			Weight, below lb. and kg.		
Units		Square Meters	Units		Kilograms
1 square inch	=	0.000 645 162 6	1 grain	=	0.000 064 798 9
1 square link	=	0.040 468 73	1 apoth. scruple	=	0.001 295 978
1 square foot	=	0.092 903 41	1 pennyweight	=	0.001 555 174
1 square yard	=	0.836 130 7	1 avoird. dram	=	0.001 771 845
1 square rod	=	25.292 95	1 apoth. dram	=	0.003 887 935
1 square chain	=	404.6873	1 avoird. ounce	=	0.028 349 53
1 acre	=	4046.873	1 apoth. or troy ounce	=	0.031 103 48
1 square mile	=	2 589 998.000	1 apoth. or troy pound	=	0.373 241 77
1 square centimeter	=	0.0001	1 avoird. pound	=	0.453 592 427 7
1 square meter	=	1	1 milligram	=	0.000 001
1 hectare	=	10 000.000	1 gram	=	0.001
			1 kilogram	=	1

Volume			Weight, above oz. av.		
Units		Cubic Meters	Units		Kilograms
1 cubic inch	=	0.000 016 387 16	1 avoirdupois ounce	=	0.028 349 53
1 cubic foot	=	0.028 317 016	1 avoirdupois pound	=	0.453 592 427 7
1 cubic yard	=	0.764 559 4	1 short hundredweight	=	45.359 243
1 cubic centimeter	=	0.000 001	1 short ton	=	907.184 86
1 cubic decimeter	=	0.001	1 long ton	=	1016.047 04
1 cubic meter	=	1	1 kilogram	=	1
			1 metric ton	=	1000

Capacity, Liquid			Money Values		
Units		Liters	(Legal equivalents from Secretary of Treasury, July 1, 1914)		
1 minim	=	0.000 061 610 2	Units		Dollars
1 fluid dram	=	0.003 696 61	1 dollar	=	1.
1 fluid ounce	=	0.029 572 9	1 franc (French)	=	.193
1 gill	=	0.118 292	1 mark (German)	=	.238
1 liquid pint	=	0.473 167	1 pound sterling (British)	=	4.8665
1 liquid quart	=	0.946 333	1 shilling (British)	=	.2433
1 gallon	=	3.785 332	1 penny (British)	=	.020275
1 milliliter	=	0.001	Cents, centimes and pfennig are not included as they may be figured as decimals of dollar, franc and mark, respectively.		
1 liter	=	1			
1 cubic inch	=	0.016 386 7			

(Continued on following page)

A Convenient Metric Conversion

Compiled by C. W. Hunt

Millimeters	×	.03937	= inches.
Millimeters	÷	25.4	= inches.
Centimeters	×	.3937	= inches.
Centimeters	÷	2.54	= inches.
Meters	×	39.37	= inches. (Act of Congress.)
Meters	×	3.281	= feet.
Meters	×	1.094	= yards.
Kilometers	×	.6214	= miles.
Kilometers	÷	1.6093	= miles.
Kilometers	×	3280.8	= feet.
Square Millimeters	×	.00155	= square inches.
Square Millimeters	÷	645.2	= square inches.
Square Centimeters	×	.155	= square inches.
Square Centimeters	÷	6.452	= square inches.
Square Meters	×	10.764	= square feet.
Square Kilometers	×	247.1	= acres.
Hectare	×	2.471	= acres.
Cubic Centimeters	÷	16.387	= cubic inches.
Cubic Centimeters	÷	3.697	= fluid drachms.
Cubic Centimeters	÷	29.57	= fluid ounces.
Cubic Meters	×	35.314	= cubic feet.
Cubic Meters	×	1.308	= cubic yards.
Cubic Meters	×	264.2	= gallons (231 cubic inches).
Liters	×	61.023	= cubic inches. (Act of Congress.)
Liters	×	33.84	= fluid ounces.
Liters	×	26.42	= gallons (231 cubic inches).
Liters	÷	3.785	= gallons (31 cubic inches).
Liters	÷	28.317	= cubic feet.
Hectoliters	×	3.531	= cubic feet.
Hectoliters	×	2.838	= bushels (2150.42 cubic inches).
Hectoliters	×	.1308	= cubic yards.
Hectoliters	×	26.42	= gallons (231 cubic inches).
Grammes	×	15.432	= grains. (Act of Congress.)
Grammes	×	981	= dynes.
Grammes	÷	28.35	= ounces avoirdupois.
Joule	×	.7373	= foot pounds.
Kilograms	×	2.2046	= pounds.
Kilograms	×	35.27	= ounces avoirdupois.
Kilograms	÷	907.2	= tons (2,000 pounds).
Kilograms per square cent.	×	14.223	= pounds per square inch.
Kilogram-meters	×	7.233	= foot lbs.
Kilo per Meter	×	.672	= lbs. per foot.
Kilo per Cubic Meter	×	.0624	= lbs. per cubic foot.
Kilo-watts	×	1.34	= horse-power.
Watts	÷	746	= horse-power.
Watts	×	.7373	= ft. pounds per second.
Caloric	×	3.968	= B.T.U.
Cheval vapeur	×	.9863	= horse-power.
Centigrade	×	1.8 + 32	= degree Fahrenheit.
Francs	×	.193	= dollars.
Gravity Paris		= 980.94	Centimeter per sec.

French and American Equivalent Measures

MEASURES OF LENGTH

French		United States
1 meter	.....	39.37 inches, or 3.28083 feet
.3048 meter	.....	1 foot
1 centimeter	.....	.3937 inch
2.54 centimeters	.....	1 inch
1 millimeter		.03937 inch, or 1/25 inch nearly
25.4 millimeters		1 inch
1 kilometer		1093.61 yards, or .62137 mile

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Equivalent Values of Electrical, Mechanical and Heat Units

Unit	Equivalent Value in Other Units
1 Kilowatt Hour =	1,000 watt hours. 1.341 horsepower hours. 2,655,180 ft.-lbs. 3,600,000 joules. 3,415 heat units. 367,100 kilogram meters. 0.234 lb. carbon oxidized with perfect efficiency. 3.52 lbs. water evaporated from and at 212 degrees F. 22.77 lbs. of water raised from 62 degrees to 212 degrees F.
1 Horsepower Hour =	0.7457 kilowatt hours. 1,980,000 ft.-lbs. 2,546.5 heat units per hour. 273,740 kilogram meters. 0.174 lb. carbon oxidized with perfect efficiency. 2.62 lbs. water evaporated from and at 212 degrees F. 17.0 lbs. water raised from 62 degrees F. to 212 degrees F.
1 Kilo- watt =	1,000 watts. 1.3410 horsepower. 2,655,180 ft.-lbs. per hour. 44,253 ft.-lbs. per minute. 737.56 ft.-lbs. per second. 3,415 heat units per hour. 56.92 heat units per minute. 0.9846 heat units per second. 0.234 lb. carbon oxidized per hour. 3.52 lbs. water evap. per hour from and at 212 degrees.
1 Horsepower =	745.7 watts. 0.7457 kilowatt. 33,000 ft.-lbs. per minute. 550 ft.-lbs. per second. 2,546.5 heat units. 42.44 heat units per minute. 0.707 heat units per second. 0.174 lb. carbon oxidized per hour. 2.62 lbs. water evap. per hour from and at 212 degrees F.
1 Joule =	1 watt second. 0.00000278 kilowatt hour. 0.102 kilogram meters. 0.0009486 heat units. 0.73756 ft.-lb.

(Continued on following page)

Equivalent Values of Electrical, Mechanical and Heat Units

Unit	Equivalent Value in Other Units
1 Ft.-lb. =	1.3558 joules. 0.13826 kilogram meters. 0.000003766 kilowatt hour. 0.0012861 heat unit. 0.0000005 horsepower hour.
1 Watt =	1 joule per second. 0.001341 horsepower. 3.415 heat units per hour. 0.73756 ft.-lb. per second. 0.0035 lb. water evap. per hour. 44.254 ft.-lbs. per minute.
1 Watt per sq. in. =	8.20 heat units per sq. ft. per minute. 6,373 ft.-lbs. per sq. ft. per minute. 0.1931 horsepower per sq. ft.
1 Heat unit =	1,054.2 watt seconds. 777.54 ft.-lbs. 107.5 kilogram meters. 0.0002928 kilowatt hour. 0.0003927 horsepower hour. 0.000685 lb. carbon oxidized. 0.001030 lb. water evap. from and at 212 degrees F.
1 Heat unit per sq. ft. per min. =	0.1220 watt per sq. in. 0.01757 kilowatt per sq. ft. 0.02356 horsepower per sq. ft.
1 Kilogram Meter =	7.233 ft.-lbs. 0.000003653 horsepower hour. 0.000002724 kilowatt hour. 0.009302 heat unit.
1 lb. Carbon Oxidized with perfect efficiency =	14,600 heat units. 1.11 lbs. anthracite coal oxidized. 2.5 lbs. dry wood oxidized. 22 cubic feet illuminating-gas. 4.275 kilowatt hours. 5.733 horsepower hours. 11,354,000 ft.-lbs. 15.05 lbs. of water evap. from and at 212 degrees F.
1 lb. Water Evap. from and at 212 degrees F. =	0.2841 kilowatt hour. 0.3811 horsepower hour. 970.4 heat units. 104,320 kilogram meters. 1,023,000 joules. 754.525 ft.-lbs. 0.066466 lb. carbon oxidized.

**Table of Kilogramme Calories, Equivalent to
British Thermal Units**

British Thermal	0	1	2	3	4	5	6	7	8	9	British Thermal
0		.252	.504	.756	1.008	1.260	1.512	1.764	2.016	2.268	0
10	2.52	2.772	3.024	3.276	3.528	3.780	4.032	4.284	4.536	4.788	10
20	5.04	5.292	5.544	5.796	6.048	6.300	6.552	6.804	7.056	7.308	20
30	7.56	7.812	8.064	8.316	8.568	8.820	9.072	9.324	9.576	9.828	30
40	10.08	10.332	10.584	10.836	11.088	11.340	11.592	11.844	12.096	12.348	40
50	12.60	12.852	13.104	13.356	13.608	13.860	14.112	14.364	14.616	14.868	50
60	15.12	15.372	15.624	15.876	16.128	16.380	16.632	16.884	17.136	17.388	60
70	17.64	17.892	18.144	18.396	18.648	18.900	19.152	19.404	19.656	19.908	70
80	20.16	20.412	20.664	20.916	21.168	21.420	21.672	21.924	22.176	22.428	80
90	22.68	22.932	23.184	23.436	23.688	23.940	24.192	24.444	24.696	24.948	90

1 British thermal unit = 251.996 gramme calories.

Weights, Fusion Points and Conductivity of Metals

	Pounds per Cu. Ft.	Specific Gravity	Fusion Point	Heat Conductivity	Electric Conductivity
Aluminum.....	166	2.66	1159	313	551
Antimony.....	418	6.70	800	40	42
Babbitt metal.....	440	7.18	.....	.....	.....
Bismuth.....	607	9.74	511	18	12
Brass, cast.....	505	8.10	.....	.....	.....
Brass, rolled.....	525	8.40	.....	.....	.....
Bronze, aluminum.....	471	7.55	.....	.....	.....
Bronze, phosphor.....	576	9.23	.....	.....	.....
Copper, cast.....	542	8.70	1922	736	999
Copper, rolled.....	555	8.90	.....	.....	.....
Gold, 24 carat.....	1204	19.26	1913	532	806
Iron, cast.....	450	7.21	..	.....	.....
Iron, wrought.....	480	7.90	.....	119	164
Iron, pure.....	.....	.....	2912	.....	.....
Lead, commercial.....	710	11.38	621	85	88
Mercury, 60F.....	846	13.58	.....	13	25
Nickel.....	549	8.80	2640	.....	79
Platinum.....	1342	21.50	3230	84	167
Silver.....	655	10.50	1742	1000	1000
Steel, Bessemer.....	490	7.85	.....	.....	.....
Tin.....	459	7.35	450	152	152
Zinc.....	437	7.15	783	.....	.....

Heat and electric conductivity are measured in comparison with these properties in silver.

The weight of a cubic foot of distilled water is in pounds, 62.47 at 32 deg. F., 62.425 at 39 deg. F., 62.355 at 62 deg. F., 59.700 at 212 deg. F., and 57.400 as ice.

Capacity of Atmospheric Air for Water Vapor at Different Temperatures

Temperature in Degrees Fahrenheit	Pounds per Cubic Feet Dry Air	Pounds of Vapor in One Pound of Air	Weight in Pounds, Cubic Feet Saturated Air	Vapor in Air	A | V
32	0.0807	0.00379	0.0802	0.000304	263.7
42	0.0791	0.00561	0.0784	0.000440	178.18
52	0.0776	0.00819	0.0766	0.000627	122.
62	0.0761	0.01179	0.0747	0.000881	85.
72	0.0747	0.01680	0.0727	0.001221	59.5
82	0.0733	0.02361	0.0706	0.001667	42.3
92	0.0720	0.03289	0.0684	0.002250	30.3
102	0.0707	0.04547	0.0659	0.002997	22

Variation of Volume and Temperature With Compression

Gauge Pressure	Volume	Temperature
0	1.000	60
2	.910	80.4
5	.810	106
10	.690	145
20	.543	207
30	.454	252
40	.393	302
50	.350	339
75	.276	420
100	.232	485
115	.213	518
130	.197	550
145	.184	580
160	.172	607
175	.163	632
200	.149	672

This table is figured on the assumption that no heat is added or abstracted.

Boiling Point of Water at Various Altitudes

Altitude Above Sea Level in Feet	Boiling Point of Water in Degrees Fahrenheit
0.000	212
1,025	210
2,063	208
3,115	206
4,169	204
5,225	202
6,304	200
7,381	198
8,431	196
9,579	194
10,685	192
11,800	190

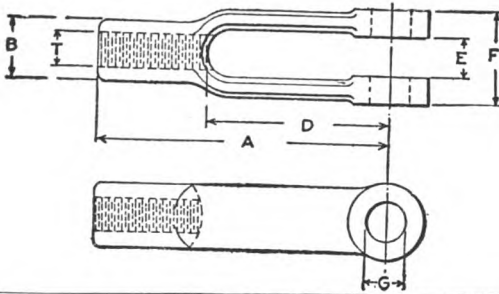
To keep the cooling water from reaching the boiling point at any altitude, as well as at any atmospheric temperature, automatic heat regulation is therefore necessary.

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Adjustable Yoke Rod Ends

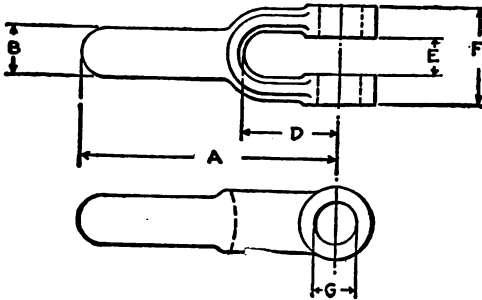
Threads U. S. Form.

S. A. E. Practice.



T	A	B	D	E	F	G	Limits of G	
$\frac{3}{16}$ —32	$1\frac{1}{16}$	$\frac{5}{16}$	1	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	+0.001	—0.001
$\frac{1}{4}$ —28	2	$\frac{7}{16}$	$1\frac{1}{4}$	$\frac{9}{32}$	$\frac{5}{16}$	$\frac{1}{4}$	+0.001	—0.001
$\frac{3}{8}$ —24	$2\frac{1}{4}$	$\frac{1}{2}$	$1\frac{1}{8}$	$1\frac{1}{32}$	$\frac{3}{8}$	$\frac{3}{8}$	+0.001	—0.001
$\frac{1}{2}$ —20	$2\frac{1}{2}$	$\frac{5}{8}$	$1\frac{1}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	+0.001	—0.001
$\frac{3}{4}$ —16	$2\frac{3}{4}$	$\frac{3}{4}$	$1\frac{1}{8}$	$\frac{1}{2}$	1	$\frac{3}{4}$	+0.001	—0.001
1 —14	$3\frac{1}{4}$	1	$1\frac{1}{8}$	$\frac{1}{2}$	1	$\frac{3}{4}$	+0.001	—0.001
$\frac{1}{2}$ —20	$4\frac{3}{16}$	$1\frac{1}{16}$	$3\frac{1}{16}$	$\frac{9}{16}$	$1\frac{1}{8}$	$\frac{1}{2}$	+0.001	—0.002
$\frac{3}{4}$ —18	$4\frac{1}{2}$	$1\frac{1}{8}$	$3\frac{1}{16}$	$1\frac{1}{16}$	$1\frac{1}{8}$	$\frac{5}{8}$	+0.001	—0.002
$\frac{1}{2}$ —16	$6\frac{1}{16}$	$1\frac{1}{4}$	$4\frac{3}{16}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$\frac{3}{4}$	+0.001	—0.002
$\frac{3}{4}$ —14	$7\frac{1}{8}$	$1\frac{1}{2}$	$5\frac{1}{4}$	$1\frac{1}{16}$	$1\frac{1}{8}$	$\frac{3}{4}$	+0.001	—0.002
1 —14	8	$1\frac{1}{2}$	6	$1\frac{1}{16}$	$2\frac{1}{8}$	1	+0.001	—0.002

Plain Yoke Rod Ends



B	A	D	E	F	G	Limits of G	
$\frac{3}{16}$	$1\frac{1}{4}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	$\frac{3}{16}$	+0.001	—0.001
$\frac{1}{4}$	$1\frac{1}{4}$	$\frac{5}{16}$	$\frac{9}{32}$	$\frac{5}{16}$	$\frac{1}{4}$	+0.001	—0.001
$\frac{3}{8}$	2	$\frac{3}{4}$	$1\frac{1}{32}$	$\frac{3}{4}$	$\frac{3}{8}$	+0.001	—0.001
$\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{7}{32}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{1}{2}$	+0.001	—0.001
$\frac{3}{4}$	$2\frac{1}{4}$	1	$\frac{1}{2}$	1	$\frac{3}{4}$	+0.001	—0.001
$\frac{1}{2}$	$2\frac{1}{2}$	$1\frac{1}{8}$	$\frac{9}{16}$	$1\frac{1}{8}$	$\frac{1}{2}$	+0.001	—0.002
$\frac{3}{4}$	$2\frac{3}{4}$	$1\frac{1}{16}$	$1\frac{1}{16}$	$1\frac{1}{8}$	$\frac{5}{8}$	+0.001	—0.002
$\frac{1}{2}$	3	$1\frac{1}{4}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$\frac{3}{4}$	+0.001	—0.002
$\frac{3}{4}$	4	2	$1\frac{1}{16}$	$1\frac{1}{8}$	$\frac{3}{4}$	+0.001	—0.002
1	$4\frac{1}{4}$	$2\frac{1}{4}$	$1\frac{1}{16}$	$2\frac{1}{8}$	1	+0.001	—0.002

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Rod End Pins

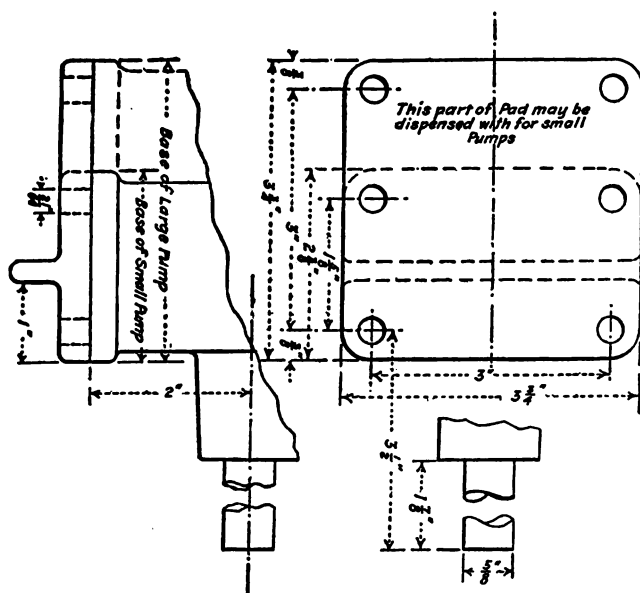
A	I	J	K	COTTER PIN		d = DRILL		DIFFERENCE	
				d ¹	L	No.	Dia.	d - d ¹	*d - d ¹ + k
$\frac{3}{16}$	0.4464	$\frac{3}{16}$	0.0089	$\frac{3}{16}$	$\frac{3}{16}$	48	0.076	0.0135	0.0224
$\frac{1}{4}$	0.6339	$\frac{1}{4}$	0.0089	$\frac{1}{4}$	$\frac{1}{4}$	48	0.076	0.0135	0.0224
$\frac{5}{16}$	0.7595	$\frac{5}{16}$	0.0095	$\frac{5}{16}$	$\frac{5}{16}$	36	0.106	0.0123	0.0224
$\frac{3}{8}$	0.8845	$\frac{3}{8}$	0.0095	$\frac{3}{8}$	$\frac{3}{8}$	36	0.106	0.0123	0.0218
$\frac{7}{16}$	1.0095	$\frac{7}{16}$	0.0095	$\frac{7}{16}$	$\frac{7}{16}$	36	0.106	0.0123	0.0218
$\frac{1}{2}$	1.1331	$\frac{1}{2}$	0.0081	$\frac{1}{2}$	$\frac{1}{2}$	28	0.140	0.0150	0.0231
$\frac{5}{8}$	1.3987	$\frac{5}{8}$	0.0237	$\frac{5}{8}$	$\frac{1}{2}$	28	0.140	0.0150	0.0231
$\frac{3}{4}$	1.6550	$\frac{3}{4}$	0.0300	$\frac{3}{4}$	$\frac{1}{2}$	11	0.191	0.0192	0.0335
$\frac{7}{8}$	1.9201	$\frac{7}{8}$	0.0451	$\frac{7}{8}$	$\frac{1}{2}$	11	0.191	0.0191	0.0642
1	2.1701	1	0.0451	1	$\frac{1}{2}$	11	0.191	0.0191	0.0642

All dimensions in inches. *Total clearance between yoke and cotter.

Tire-Pump Bases

S. A. E. Standard

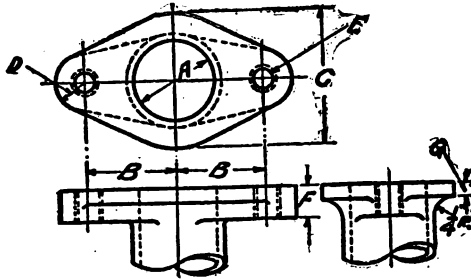
In the tire-pump bases and pads shown in the accompanying sketch, the pads are to be $3\frac{3}{4}$ in. square, with four $\frac{3}{4}$ -in. holes symmetrically located on 3-in. centers, and two additional



holes to be used with two of the original four for pumps with small bases. In case of small pumps the unused part of the base may be omitted. If a rib is used on the bottom of the pad, it is to be located as shown in order to clear the bolts in all six of the holes.

Carburetor Fittings (S. A. E. Standard)

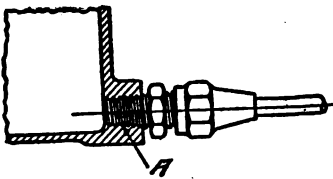
FLANGES



Carburetor Size	A	B	C	D	E *	F	G
3/4	15/16"	1 1/16"	1 5/8"	11/32"	5/16"x18 thr.	3/8"	1/8"
7/8	1 1/16"	1 1/8"	1 3/4"	11/32"	5/16"x18 thr.	3/8"	1/8"
1	1 3/16"	1 3/16"	1 7/8"	11/32"	5/16"x18 thr.	13/32"	5/32"
1 1/4	1 7/16"	1 11/32"	2 3/16"	13/32"	3/8" x16 thr.	15/32"	3/16"
1 1/2	1 11/16"	1 15/32"	2 1/2"	13/32"	3/8" x16 thr.	15/32"	3/16"
1 3/4	1 15/16"	1 21/32"	2 13/16"	15/32"	7/16"x14 thr.	9/16"	7/32"
2	2 3/16"	1 25/32"	3 1/8"	15/32"	7/16"x14 thr.	9/16"	7/32"

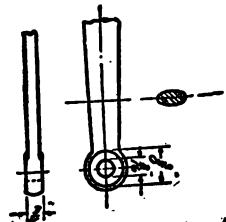
*U. S. Standard thread.
All dimensions in inches.

GASOLINE PIPE SIZES

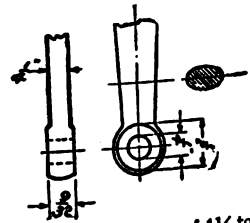


Carburetor Size	A, Briggs Standard. Pipe Thread
3/4"	3/4"
7/8"	7/8"
1"	1"
1 1/4"	1 1/4"
1 1/2"	1 1/2"
1 3/4"	1 3/4"
2"	2"

THROTTLE LEVERS



3/16" Rod end for carburetors up to 1 inch



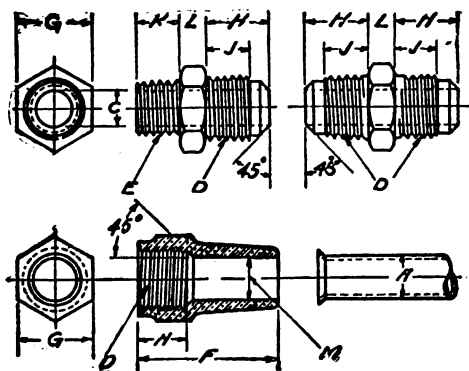
3/4" Rod end for carburetors of 1 1/4 to 2 inches inclusive

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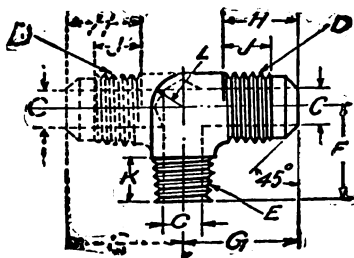
Carburetor Fittings (S. A. E. Standard)

FLARED TUBE UNIONS



A	Pipe diameter.....	1/4	5/16	3/8	7/16	1/2
C	Bore, male part.....	3/16	7/32	9/32	5/16	13/32
D	S. A. E. thread.....	7/16x20	1/2x20	5/8x18	11/16x16	3/4x16
E	Pipe thread.....	1/8	1/8	1/4	1/4	3/8
F	.....	15/16	1 1/8	1 5/16	1 1/2	1 5/8
G	.....	9/16	5/8	3/4	13/16	7/8
H	.....	1/2	9/16	5/8	11/16	3/4
J	Thread only.....	11/32	3/8	13/32	7/16	1/2
K	Thread only.....	3/8	3/8	7/16	7/16	1/2
L	.....	3/16	7/32	1/4	9/32	5/16
M	Bore, female part.....	0.255-	0.317-	0.380-	0.442-	0.505-
N	.....	0.260	0.322	0.385	0.447	0.510
	.....	11/32	3/8	7/16	1/2	9/16

FLARED TUBE ELLS AND TEES



A	Tube diameter.....	1/4	5/16	3/8	7/16	1/2
C	Drill diameter.....	3/16	7/32	9/32	5/16	13/32
D	S. A. E. thread.....	7/16x20	1/2x20	5/8x18	11/16x16	3/4x16
E	Briggs std. pipe thread..	1/8	1/8	1/4	1/4	3/8
F	Center to face.....	3/4	3/4	7/8	15/16	1
G	Center to face.....	7/8	15/16	1	1 1/8	1 3/16
H	.....	1/2	9/16	5/8	11/16	3/4
J	Thread only.....	11/32	3/8	13/32	7/16	1/2
K	Thread only.....	3/8	3/8	7/16	7/16	1/2
L	Radius.....	1/8	1/4	9/32	5/16	11/32

All dimensions on this sheet in inch measure

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Automobile Engine Light Lubricating Oil

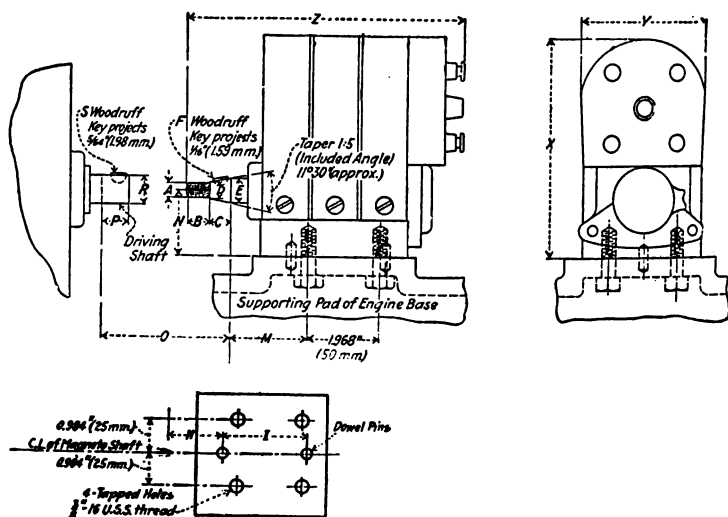
Pure mineral oil. The following characteristics are desired:

Specific gravity.....	28° to 32° Baumé
Flash point, not less than.....	400° F.
Fire test, not less than.....	450° F.
Viscosity at 100° F., Saybolt viscosimeter, not over.....	300 seconds
Viscosity at 210° F., Saybolt viscosimeter.....	40 to 50 seconds
Viscosity at 210° F., Tagliabue viscosimeter.....	60 to 65 seconds
Carbon residue, not over.....	0.50 per cent.

Magneto Dimensions

S. A. E. Practice

AIRPLANE, AUTOMOBILE, MARINE, MOTORCYCLE, TRACTOR



MAGNETO MOUNTING DIMENSIONS

When it is desired to use a non-magnetic shim with magnetos mounted on cast iron pads the shims shall be $\frac{1}{2}$ in. thick, and high strength bronze bolts shall be used. The thickness of the shim shall be added to the dimension N when laying out the distance from the face of the mounting pad to the center of the magneto shaft. A grid construction for the shims is considered preferable.

Magneto Couplings shall be $2\frac{3}{8}$ in. long and have a maximum outside diameter of $3\frac{1}{4}$ in.

Magneto Dimensions

S. A. E. Standard and Recommended Practice

AIRPLANE, AUTOMOBILE, MARINE, MOTORCYCLE, TRACTOR

		4 AND 6 CYL.		8 AND 12 CYL.		MOTORCYCLE	
		Inch	Mm.	Inch	Mm.	Inch	Mm.
A U. S. S. Threads		$\frac{3}{8}$ "-16 thds.	9.53- 1.58	$\frac{3}{8}$ "-16 thds.	9.53- 1.58	$\frac{3}{8}$ "-18 thds.	7.94- 1.41
B		.5905	15	.5905	15	.4170	10.59
C		.590	14.98	.590	14.98	.3543	9
D		.472	12	.472	12	.4409	11.20
E		.590	14.98	.590	14.98	.5118	13
F Woodruff Key (Dia. X thickness)		No. 3 $\frac{1}{2} \times \frac{1}{4}$	No. 3 12.7x 3.18	No. 3 $\frac{1}{2} \times \frac{1}{4}$	No. 3 12.7x 3.18	Special $\frac{1}{4} \times \frac{1}{2}$	Special 7.94x 2.38
H		No std.	.....	1.693	43	No std.	.....
I		No std.	.....	2.519	63.98	No std.	.....
M		2.086	52.98	2.086	52.98	1.553	39.45
N		1.771	44.98	1.968	50	1.771	44.98
*†O		2.375	60.32	2.375	60.32	No std.	.....
*†P		.75	19.05	.75	19.05	No std.	.....
*††R (limits)		.750 .749	19.06 19.04	.750 .749	19.05 19.02	No std.	.....
Coupling Bore..... (limits)		.7505 .7495	19.06 19.04	.7505 .7495	19.06 19.04	No std.	.....
‡S Woodruff Key (Dia. X thickness)		No. 8 $\frac{1}{2} \times \frac{1}{2}$	No. 8 19.05x 3.97	No. 8 $\frac{1}{2} \times \frac{1}{2}$	No. 8 19.05x 3.97	No std.	.....
Magneto Space (Airplane Max.)	X	8.000	203.20	9.000	228.60	6.000	152.40
	Y	5.000	127.00	5.000	127.00	3.750	95.25
	Z	10.000	254.00	10.000	254.00	6.375	161.93
Width at Brushes	W	No std.	.....	No std.	.....	4.000	101.60
Adv. Lever Rad.		2.125	53.97	No std.	.....	1.968	50
Timing Lever Holes	Tapped S. A. E.	$\frac{3}{8}$ "-28 thds.	6.35-.9 Mm. p'ch	No std.	.....	No std.	.....
	Plain	.25	6.35	No std.	.....	.2185	5.55
Dowels (Airplane Only)	Diam.	$\frac{1}{8}$ +.002 -.002	7.94 +.05 -.00	$\frac{1}{8}$ +.002 -.002	7.94 +.05 -.00	No std.	.....
	Depth	$\frac{1}{8}$	7.94	$\frac{1}{8}$	7.94	No std.	.....

*Provides for Impulse Couplings for tractors. Conforms to National Gas Engine Association standard.

†Recommended material for drive-shaft is selected cold-rolled stock.

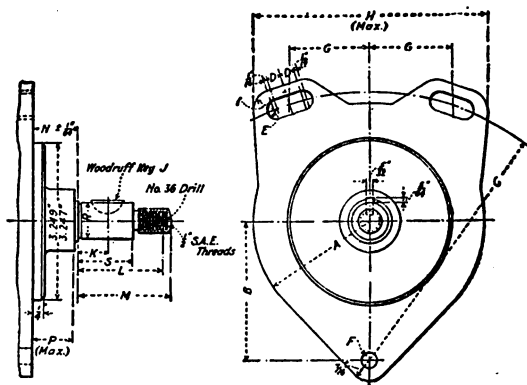
‡Not for use in airplanes.

Flange Mountings for Generators

Gear or Chain Drive

S. A. E. Standard

There are two standard sizes of generator flanges as shown. Each is provided with a pilot for locating in a bored hole when used with a gear drive and with slotted holes to allow for adjustment when used with chain drive. In the latter case the hole in the gear case will be made to clear the pilot.



Size No.	A	B	C	D	E	F	G	H	I
1	2 3/8	2 1/16	5 3/8	1/4	3/32	1 1/32	1 1/16	4 3/8	7/16
2	2 3/8	3 1/16	5 3/8	3/16	1/4	1 1/32	1 1/16	5 3/8	1 1/2

Size No.	J	K	L	M	N	P	R	S
1	6	3/16	1 11/32	1 1/16	1 1/16	3/4	0.6250 0.6245	1
2	8	1 1/16	1 23/32	1 11/16	1 1/16	1	0.7500 0.7495	1 1/4

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Lock Washer Dimensions (S. A. E. Standard)

The outside diameters of lock washers shall coincide practically with the long diameters of S. A. E. Standard nuts, which are approximately the short diameters of United States Standard nuts.

The inside diameters of the lock washers shall be from $1/64"$ to $1/32"$ larger than bolt diameters. All lock washers shall be parallel-faced sections; and bulging or malformed ends must be avoided.

Table of Sizes
Automobile Heavy (A. H.)
For General Use

Bolt Diameter	Lock Washer Section	Bolt Diameter	Lock Washer Section
$3/16"$	$1/16" \times 1/16"$	$11/16"$	$1/4" \times 1/4"$
$1/4"$	$5/64" \times 5/64"$	$3/4"$	$1/4" \times 1/4"$
$5/16"$	$1/8" \times 1/8"$	$7/8"$	$17/64" \times 17/64"$
$3/8"$	$1/8" \times 1/8"$	$1"$	$5/16" \times 5/16"$
$7/16"$	$11/64" \times 11/64"$	$1 \ 1/8"$	$5/16" \times 5/16"$
$1/2"$	$11/64" \times 11/64"$	$1 \ 1/4"$	$3/8" \times 3/8"$
$9/16"$	$13/64" \times 13/64"$	$1 \ 3/8"$	$3/8" \times 3/8"$
$5/8"$	$13/64" \times 13/64"$	$1 \ 1/2"$	$7/16" \times 7/16"$

Automobile Light (A. L.)
For Optional Use Against Soft Metal

Bolt Diameter	Lock Washer Section
$3/16"$	$1/16" \times 3/64"$
$1/4"$	$5/64" \times 1/16"$
$5/16"$	$1/8" \times 3/32"$
$3/8"$	$1/8" \times 3/32"$
$7/16"$	$11/64" \times 1/8"$
$1/2"$	$11/64" \times 1/8"$
$9/16"$	$13/64" \times 5/32"$
$5/8"$	$13/64" \times 5/32"$
$11/16"$	$1/4" \times 3/16"$
$3/4"$	$1/4" \times 3/16"$
$7/8"$	$17/64" \times 3/16"$
	$5/16" \times 1/4"$

Test

Temper

After compression to flat, reaction shall be sufficient to indicate necessary spring power, and on a subsequent compression to flat the lock washer shall manifest no appreciable loss in reaction.

Toughness

Forty-five per cent. of the lock washer, including one end, shall be firmly secured in a vise, and forty-five per cent., including the other end, shall be secured firmly between parallel jaws of a wrench. Movement of the wrench at right angle to helical curve shall twist the lock washer through forty-five degrees without sign of fracture; and shall twist the lock washer entirely apart within one hundred and thirty-five degrees.

Oversize Cylinders (S. A. E. Standard)

In order to obtain uniform practice as to the amount of metal removed in regrounding worn cylinders, only the following oversize diameters shall be used.

1st Oversize, $D + 0.010$ in.

3rd Oversize, $D + 0.030$ in.

2nd Oversize, $D + 0.020$ in.

4th Oversize, $D + 0.040$ in.

where D is the original diameter of the cylinder.

SIZES AND TOLERANCES FOR ANNULAR BALL BEARINGS (S. A. E. Standard)
LIGHT SERIES

Trade No.	BORE			DIAMETER			WIDTH			CORNERS OF THE OUTER RACE AND AT BORE OF* INNER RACE		ECCENTRICITY TOLERANCE IN INCHES		
	Mm	Inches	TOLERANCE IN INCHES	Mm	Inches	TOLERANCE IN INCHES	Mm	Inches	TOLERANCE IN INCHES (FOR BOTH RACES)	Mm	Inches	Inner Race	Outer Race	
														Plus	Minus	Plus	Minus
			Plus			Minus			Plus					Minus
200	10	0.39370	0.0002	0.0004	30	1.18110	0	0.0005	9	0.35433	0	0.0005	0.0006	0.0012
201	12	0.47244	0.0002	0.0004	32	1.25984	0	0.0005	10	0.39370	0	0.0005	0.0006	0.0012
202	15	0.59055	0.0002	0.0004	35	1.37795	0	0.0005	11	0.43307	0	0.0005	0.0006	0.0012
203	17	0.66929	0.0002	0.0004	40	1.57481	0	0.0005	12	0.47244	0	0.0005	0.0006	0.0012
204	20	0.78740	0.0002	0.0004	47	1.85040	0	0.0005	14	0.55118	0	0.0005	0.0006	0.0012
205	25	0.98425	0.0002	0.0004	52	2.04725	0	0.0008	15	0.59055	0	0.0005	0.0008	0.0012
206	30	1.18110	0.0002	0.0004	62	2.44095	0	0.0008	16	0.62992	0	0.0005	0.0008	0.0012
207	35	1.37795	0.0002	0.0004	72	2.83465	0	0.0008	17	0.66929	0	0.0005	0.0008	0.0012
208	40	1.57481	0.0002	0.0004	80	3.14962	0	0.0008	18	0.70866	0	0.0005	0.0008	0.0012
209	45	1.77166	0.0002	0.0004	85	3.34647	0	0.0008	19	0.74803	0	0.0005	0.0010	0.0016
210	50	1.96851	0.0002	0.0004	90	3.54332	0	0.0008	20	0.78740	0	0.0005	0.0010	0.0016
211	55	2.16536	0.0002	0.0004	100	3.93702	0	0.0008	21	0.82677	0	0.0005	0.0010	0.0016
212	60	2.36221	0.0002	0.0005	110	4.33072	0	0.0008	22	0.86614	0	0.0005	0.0010	0.0016
213	65	2.55906	0.0002	0.0005	120	4.72443	0	0.0008	23	0.90551	0	0.0005	0.0010	0.0016
214	70	2.75591	0.0002	0.0005	125	4.92128	0	0.0008	24	0.94488	0	0.0005	0.0010	0.0016
215	75	2.95277	0.0002	0.0005	130	5.11813	0	0.0008	25	0.98425	0	0.0005	0.0010	0.0016
216	80	3.14962	0.0002	0.0005	140	5.51183	0	0.0008	26	1.02362	0	0.0005	0.0012	0.0018
217	85	3.34647	0.0002	0.0006	150	5.90554	0	0.0012	28	1.10236	0	0.0005	0.0012	0.0018
218	90	3.54332	0.0002	0.0006	160	6.29924	0	0.0012	30	1.18110	0	0.0005	0.0012	0.0018
219	95	3.74017	0.0002	0.0006	170	6.69294	0	0.0012	32	1.25984	0	0.0005	0.0012	0.0018
220	100	3.93702	0.0002	0.0006	180	7.08664	0	0.0012	34	1.33858	0	0.0005	0.0012	0.0018
221	105	4.13387	0.0002	0.0006	190	7.48035	0	0.0012	36	1.41732	0	0.0005	0.0012	0.0018
222	110	4.33072	0.0002	0.0006	200	7.87405	0	0.0012	38	1.49607	0	0.0005	0.0012	0.0018

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Trade No.	BORE			DIAMETER			WIDTH			CORNERS OF THE OUTER RACE AND AT BORE OF INNER RACE			ECCENTRICITY TOLERANCE IN INCHES	
	Mm	Inches	TOLERANCE IN INCHES		Mm	Inches	TOLERANCE IN INCHES (FOR BOTH RACES)		Mm	Inches	Inner Race	Outer Race		
			Plus	Minus			Plus	Minus						
300	10	0.39370	0.0002	0.0004	35	1.37795	0	0.0005	11	0.43307	0	0.0006	0.0012	
301	12	0.47244	0.0002	0.0004	37	1.45669	0	0.0005	12	0.47244	0	0.0006	0.0012	
302	15	0.59055	0.0002	0.0004	42	1.65355	0	0.0005	13	0.51181	0	0.0006	0.0012	
303	17	0.66929	0.0002	0.0004	47	1.85040	0	0.0005	14	0.55118	0	0.0006	0.0012	
304	20	0.78740	0.0002	0.0004	52	2.04725	0	0.0008	15	0.59055	0	0.0006	0.0012	
305	25	0.98425	0.0002	0.0004	62	2.44095	0	0.0008	17	0.66929	0	0.0008	0.0012	
306	30	1.18110	0.0002	0.0004	72	2.83465	0	0.0008	19	0.74803	0	0.0008	0.0012	
307	35	1.37795	0.0002	0.0004	80	3.14962	0	0.0008	21	0.82677	0	0.0008	0.0012	
308	40	1.57481	0.0002	0.0004	90	3.54332	0	0.0008	23	0.90551	0	0.0008	0.0012	
309	45	1.77166	0.0002	0.0004	100	3.93702	0	0.0008	25	0.98425	0	0.0010	0.0016	
310	50	1.96851	0.0002	0.0004	110	4.33072	0	0.0008	27	1.06299	0	0.0010	0.0016	
311	55	2.16536	0.0002	0.0004	120	4.72443	0	0.0008	29	1.14173	0	0.0010	0.0016	
312	60	2.36221	0.0002	0.0005	130	5.11813	0	0.0008	31	1.22047	0	0.0010	0.0016	
313	65	2.55906	0.0002	0.0005	140	5.51183	0	0.0008	33	1.29921	0	0.0010	0.0016	
314	70	2.75591	0.0002	0.0005	150	5.90554	0	0.0012	35	1.37795	0	0.0010	0.0016	
315	75	2.95277	0.0002	0.0005	160	6.29924	0	0.0012	37	1.45669	0	0.0010	0.0016	
316	80	3.14962	0.0002	0.0005	170	6.69294	0	0.0012	39	1.53544	0	0.0012	0.0018	
317	85	3.34647	0.0002	0.0006	180	7.08664	0	0.0012	41	1.61418	0	0.0012	0.0018	
318	90	3.54332	0.0002	0.0006	190	7.48035	0	0.0012	43	1.69292	0	0.0012	0.0018	
319	95	3.74017	0.0002	0.0006	200	7.87405	0	0.0012	45	1.77166	0	0.0012	0.0018	
320	100	3.93702	0.0002	0.0006	215	8.46460	0	0.0012	47	1.85040	0	0.0012	0.0018	
321	105	4.13387	0.0002	0.0006	225	8.85830	0	0.0012	49	1.92914	0	0.0012	0.0018	
322	110	4.33072	0.0002	0.0006	240	9.44886	0	0.0012	50	1.96851	0	0.0012	0.0018	

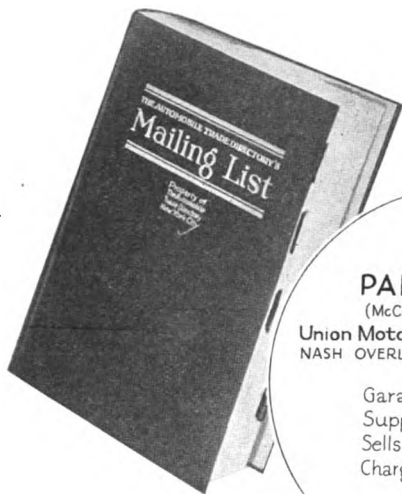
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**SIZES AND TOLERANCES FOR ANNULAR BALL BEARINGS (S. A. E. Standard)
HEAVY SERIES**

Trade No.	BORE			DIAMETER			WIDTH			CORNERS OF THE OUTER RACE AND AT BORE OF* INNER RACE		ECCENTRICITY TOLERANCE IN INCHES				
	Mm	Inches	TOLERANCE IN INCHES	Mm	Inches	TOLERANCE IN INCHES		Mm	Inches	TOLERANCE IN INCHES (FOR BOTH RACES)		Mm	Inches	Inner Race	Outer Race	
						Plus	Minus			Plus	Minus					
403	17	0.66929	0.0002	0.0004	62	2.44095	0	0.0008	17	0.66929	0	0.005	1	0.04	0.0006	0.0012
404	20	0.78740	0.0002	0.0004	72	2.83465	0	0.0008	19	0.74803	0	0.005	2	0.08	0.0006	0.0012
405	25	0.98425	0.0002	0.0004	80	3.14962	0	0.0008	21	0.82677	0	0.005	2	0.08	0.0008	0.0012
406	30	1.18110	0.0002	0.0004	90	3.54332	0	0.0008	23	0.90551	0	0.005	2	0.08	0.0008	0.0012
407	35	1.37795	0.0002	0.0004	100	3.93702	0	0.0008	25	0.98425	0	0.005	2	0.08	0.0008	0.0012
408	40	1.57481	0.0002	0.0004	110	4.33072	0	0.0008	27	1.06299	0	0.005	2	0.08	0.0008	0.0012
409	45	1.77166	0.0002	0.0004	120	4.72443	0	0.0008	29	1.14173	0	0.005	2	0.08	0.0010	0.0016
410	50	1.96851	0.0002	0.0004	130	5.11813	0	0.0008	31	1.22047	0	0.005	2	0.08	0.0010	0.0016
411	55	2.16536	0.0002	0.0004	140	5.51183	0	0.0008	33	1.29921	0	0.005	3	0.12	0.0010	0.0016
412	60	2.36221	0.0002	0.0005	150	5.90554	0	0.0012	35	1.37795	0	0.005	3	0.12	0.0010	0.0016
413	65	2.55906	0.0002	0.0005	160	6.29924	0	0.0012	37	1.45669	0	0.005	3	0.12	0.0010	0.0016
414	70	2.75591	0.0002	0.0005	180	7.08664	0	0.0012	42	1.65355	0	0.005	3	0.12	0.0010	0.0016
415	75	2.95277	0.0002	0.0005	190	7.48035	0	0.0012	45	1.77166	0	0.005	3	0.12	0.0010	0.0016
416	80	3.14962	0.0002	0.0005	200	7.87405	0	0.0012	48	1.88977	0	0.005	3	0.12	0.0012	0.0018
417	85	3.34647	0.0002	0.0006	210	8.26775	0	0.0012	52	2.04725	0	0.005	3	0.12	0.0012	0.0018
418	90	3.54332	0.0002	0.0006	225	8.85830	0	0.0012	54	2.12599	0	0.005	3	0.12	0.0012	0.0018
419	95	3.74017	0.0002	0.0006	250	9.84256	0	0.0012	55	2.16536	0	0.005	3	0.12	0.0012	0.0018
420	100	3.93702	0.0002	0.0006	265	10.43311	0	0.0012	60	2.36221	0	0.005	3	0.12	0.0012	0.0018

*A chamfer of 45 degrees ground true with the bore and outside diameter is recommended.

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**PADUCAH, KY.**

(McCracken Co.) Pop. 24,842

Union Motor Co. of Paducah, Inc.
NASH OVERLAND PACKARD NASH TRUCKGarage - Machine Shop
Supply Department
Sells tires. Vulcanizing
Charges Electric Vehicles

Another Way To Determine Credits

There are thousands of smaller dealers, garages and repair shops—reputable establishments—on whose credit immediate information cannot be obtained through the regular commercial agency channels.

But there is another and quicker way.

Credit Information Through The Automobile Trade Directory's Mailing List Service

This Mailing List Service is of incalculable help in determining these credits, because it gives full information regarding what cars, trucks or tractors the customer handles, whether he sells tires and supplies, operates a repair shop, charges electric vehicles, builds or repairs bodies, does vulcanizing, painting, upholstering, etc.

In this manner, that is by reflecting the scope of the dealer's business activities, accurate and immediate judgment of his enterprise and financial stability is made possible.

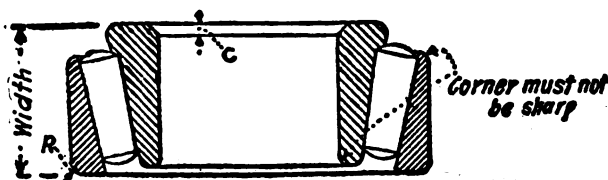
We shall be glad to explain the details of the A. T. D. Mailing List Service to interested correspondents.

THE AUTOMOBILE TRADE DIRECTORY
239 West 39th Street New York

Please mention The Automobile Trade Directory

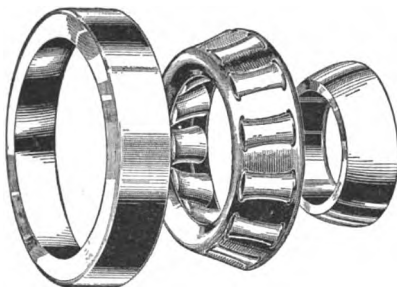
Roller Bearings Narrow and Wide Series S. A. E. Standard Sizes and Tolerances

(Adopted in August, 1916)



Bearing Number	BORE				DIAMETER				WIDTH				CHAMFER O NOT LESS THAN		RADIUS R		ECONOMY TOLERANCE IN INCHES	
	Mm.	In.	TOLERANCE IN INCHES		Mm.	In.	TOLERANCE IN INCHES		Mm.	In.	TOLERANCE IN INCHES		Mm.	In.	Mm.	In.	Inner Race	Outer Race
			Plus	Minus			Plus	Minus			Plus	Minus						
RM 204...	20	.78740	.0002	.0004	47	1.85040	0	.0008	19.05	%	.020	.020	1	.04	1	.04	.0008	.0012
RM 205...	25	.98425	.0002	.0006	52	2.04725	0	.0008	19.05	%	.020	.020	1	.04	1	.04	.0008	.0012
RM 206...	30	1.18110	.0002	.0006	62	2.44065	0	.0008	19.05	%	.020	.020	1	.04	1	.04	.0008	.0012
RM 207...	35	1.37795	.0002	.0006	72	2.83465	0	.0008	22.22	%	.020	.020	1	.04	1	.04	.0008	.0012
RM 208...	40	1.57481	.0002	.0006	80	3.14962	0	.0008	25.40	1	.020	.020	2	.06	2	.06	.0008	.0012
RM 209...	45	1.77166	.0002	.0006	85	3.34647	0	.0008	25.40	1	.020	.020	2	.06	2	.06	.0010	.0016
RM 210...	50	1.96851	.0002	.0006	90	3.54332	0	.0008	25.40	1	.020	.020	2	.06	2	.06	.0010	.0016
RM 211...	55	2.16536	.0002	.0006	100	3.93702	0	.0008	30.16	1 1/2	.020	.020	2	.06	2	.06	.0010	.0016
RM 212...	60	2.36221	.0002	.0006	110	4.33072	0	.0008	34.92	1 1/2	.020	.020	2	.06	2	.06	.0010	.0016
RM 213...	65	2.55906	.0002	.0006	120	4.72443	0	.0008	34.92	1 1/2	.020	.020	2	.06	2	.06	.0010	.0016
RM 214...	70	2.75591	.0002	.0006	125	4.92128	0	.0008	36.51	1 1/2	.020	.020	2	.06	2	.06	.0010	.0016
RM 215...	75	2.95277	.0002	.0006	130	5.11813	0	.0008	36.51	1 1/2	.020	.020	2	.06	2	.06	.0010	.0016
RM 216...	80	3.14962	.0002	.0006	140	5.51183	0	.0008	41.27	1 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 217...	85	3.34647	.0002	.0007	150	5.90554	0	.0012	44.45	1 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 218...	90	3.54332	.0002	.0007	160	6.29924	0	.0012	50.80	2	.020	.020	2	.12	2	.12	.0012	.0018
RM 219...	95	3.74017	.0002	.0007	170	6.69294	0	.0012	55.56	2 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 220...	100	3.93702	.0002	.0007	180	7.08664	0	.0012	60.32	2 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 221...	105	4.13387	.0002	.0007	190	7.48035	0	.0012	65.09	2 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 222...	110	4.33072	.0002	.0007	200	7.87406	0	.0012	69.85	2 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 304...	20	.78740	.0002	.0006	52	2.04725	0	.0008	22.22	%	.020	.020	1	.04	1	.04	.0008	.0012
RM 305...	25	.98425	.0002	.0006	62	2.44065	0	.0008	25.40	1	.020	.020	1	.04	1	.04	.0008	.0012
RM 306...	30	1.18110	.0002	.0006	72	2.83465	0	.0008	30.16	1 1/2	.020	.020	2	.06	2	.06	.0008	.0012
RM 307...	35	1.37795	.0002	.0006	80	3.14962	0	.0008	34.92	1 1/2	.020	.020	2	.06	2	.06	.0008	.0012
RM 308...	40	1.57481	.0002	.0006	90	3.54332	0	.0008	36.51	1 1/2	.020	.020	2	.06	2	.06	.0008	.0012
RM 309...	45	1.77166	.0002	.0006	100	3.93702	0	.0008	39.69	1 1/2	.020	.020	2	.06	2	.06	.0010	.0016
RM 310...	50	1.96851	.0002	.0006	110	4.33072	0	.0008	44.45	1 1/2	.020	.020	2	.06	2	.06	.0010	.0016
RM 311...	55	2.16536	.0002	.0006	120	4.72443	0	.0008	49.21	1 1/2	.020	.020	2	.06	2	.06	.0010	.0016
RM 312...	60	2.36221	.0002	.0006	130	5.11813	0	.0008	55.97	2 1/2	.020	.020	2	.06	2	.06	.0008	.0012
RM 313...	65	2.55906	.0002	.0006	140	5.51183	0	.0008	58.74	2 1/2	.020	.020	2	.12	2	.12	.0010	.0016
RM 314...	70	2.75591	.0002	.0007	150	5.90554	0	.0012	63.50	2 1/2	.020	.020	2	.12	2	.12	.0010	.0016
RM 315...	75	2.95277	.0002	.0007	160	6.29924	0	.0012	68.26	2 1/2	.020	.020	2	.12	2	.12	.0010	.0016
RM 316...	80	3.14962	.0002	.0007	170	6.69294	0	.0012	68.26	2 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 317...	85	3.34647	.0002	.0007	180	7.08664	0	.0012	73.02	2 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 318...	90	3.54332	.0002	.0007	190	7.48035	0	.0012	73.02	2 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 319...	95	3.74017	.0002	.0007	200	7.87406	0	.0012	77.70	2 1/2	.020	.020	2	.12	2	.12	.0012	.0018
RM 320...	100	3.93702	.0002	.0007	215	8.46460	0	.0012	83.55	2 1/2	.020	.020	2	.12	2	.12	.0008	.0012

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Replacements Now Ready for Front Wheels

Overland.
Dodge—all models.
Maxwell—1914-15-16-
17-18-19-20.
Oakland—34, 34B.
Dort—5A, 6, 9, 29, 8,
11, 15.
Chevrolet—F, FA,
Baby Grand, 490; H.
Roamer—all models
except 1920.
Allen—37-41-1916-'17-
'18.
Vim Truck—20, 21.
Auburn—1916-17-18-19.
Ford—all models.
Scripps-Booth—39.
Briscoe—all models.
Buick—45, 1916-17.
Nash-Jeffery—'16 to
'20 inclusive.
Lexington—6-0-17.
Also standard annu-
lar bearings Nos.
305-306-307-308-210.
Davis—38; 6FG: H, I,
K, L, P.
Elgin—1916.
Elcar—1916.
All-American Truck
—1917 (one-ton).
Vellie—22, 1917.
Moon—1917.
Hupmobile—R1, R2,
R3, R4.
King—D '15, '16.
Stearns—L4 '15-16-17;
S. K. 8, '16-17.
Paige—6-39 (P-18),
6-38; 6-48.

In Shafer bearings misalignment is impossible, for wear and break-down through improper fitting never occurs. The cone fits into a nest of rollers and is permitted free motion in any direction without losing contact. It rides with the spindle and automatically compensates for any spindle deflection. The action is similar to that of universal joint and provides positive correction for any misalignment.

Shafers never twist or "climb" when under load. The concave roller, as the diagram shows, is always in full length contact with the convex cup and cone and this natural alignment is maintained no matter what the variation in load or from what angle received.

A slight lateral movement of either cup or cone constitutes a perfect adjustment for such slight wear as may occur through long, heavy service. Shafers have proved their superior merit through a long series of road and break-down tests. They merit consideration wherever a friction eliminant is required. Send us your specifications.

SHAFER BEARING CORP.
4500 Ravenswood Avenue
CHICAGO, ILLINOIS



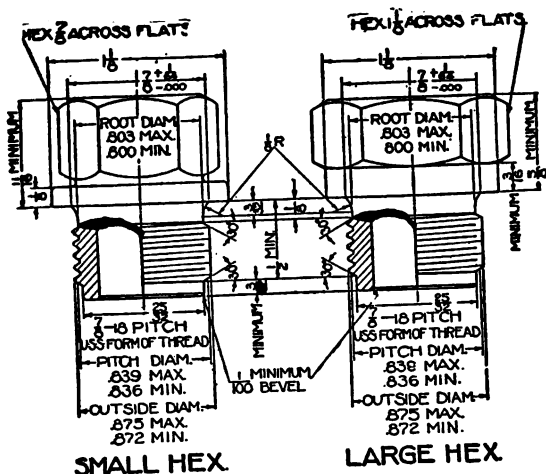
Kline Car—6-38 F;
6-38 CA, 6-42 H.
Franklin—1917-21
(incl.).
Milburn—'17-18.
Pathfinder—'13-14-15
(715).
Pilot—6-45, 1918.
Empire—1918.
Holmes—6-38, 1916,
348.
Miami Trailer—10, '18-
'19.
Lexington—6-0-18
(1917).
Abbott—6-44; '18.
Commerce—E (1-ton),
'16-'17-'18-'19.
Mar Handley—'17.
Haynes—30 to 37 (15-
16-17), 6 & 12 ('16-
'17), light C, '17.
Imperial—44, '13.
American—'12-'13.
Interstate—40, 41, 42.
Mitchell—1910-14
(incl.).
R. C. H.—'13-'14.
Indiana Truck—Mod.
S. '16-'17; Mod. T
(1-ton) '17.
Kissel Truck—134-ton
'17-'18.
Scripps-Booth—D '17.
Also supplied inter-
changeable with
standard makes of
ball and roller type.

Geo. D. Bailey Co.
Service Division
4584 Ravenswood
Avenue
Chicago, Illinois

Self Aligning
SHAFER Roller
Bearing
100% Load Capacity From Any Angle

Please mention The Automobile Trade Directory

SPARK PLUG SHELL (S. A. E. Standard)



All dimensions below shoulder are identical for both spark plug shells.

If spark plug taps are made to dimensions shown in the accompanying table, the plugs can be turned in by hand, using a wrench only for final tightening.

THREAD FOR SPARK PLUG TERMINALS
NO. 8-32 (0.164 IN. DIA.) A. S. M. E. STANDARD

	Nominal Dimension	THREAD LIMITS	
		Spark Plug	Tap
Outside diameter	.875	.872 Min. .875 Max.	.877 Min. .879 Max.
Pitch diameter	.839	.836 Min. .839 Max.	.841 Min. .843 Max.
Root diameter	.803	.800 Min. .803 Max.	.805 Min. .807 Max.

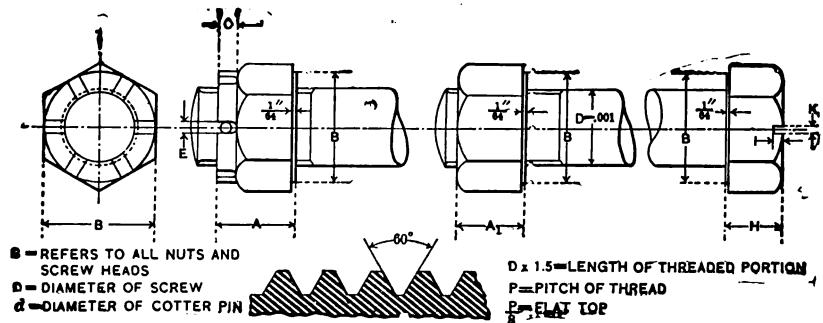
Tap Drill Diameter
Nominal $\frac{1}{16}$ = .8125
.810 Min. .813 Max.

All dimensions in inches.

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HEXAGON HEAD SCREWS, CASTLE AND PLAIN NUTS (S. A. E. Standard)

It is assumed that where screws are to be used in soft material, such as cast-iron, brass, bronze or aluminum, the United States standard pitches will be used.

DIMENSIONS

D	1/4	5/16	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1	1 1/8	1 1/4	1 5/8	1 3/4
P	28	24	24	20	20	18	18	16	16	14	14	12	12	12	12
A	5/32	21/64	13/32	29/64	9/16	89/64	23/8	49/64	13/16	29/32	1	15/32	1 1/4	1 13/32	1 1/2
A ¹	7/32	17/64	21/64	3/8	7/16	81/64	85/64	19/32	21/32	49/64	7/8	63/64	1 3/32	1 13/64	1 9/16
B	7/16	1/2	9/16	5/8	3/4	7/8	15/16	1	1 1/16	1 1/4	1 7/16	1 5/8	1 13/16	2	2 3/16
C	5/32	3/8	1/2	5/8	3/4	7/8	1 1/8	1 1/4	1 1/2	1 3/4	1 5/8	1 3/4	1 7/8	1 5/4	1 3/2
E	5/64	3/64	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	1 3/4	1 1/2	1 3/4	1 1/2	1 1/4
H	5/16	15/64	9/32	21/64	3/8	27/64	15/32	33/64	9/16	21/32	3/4	27/32	15/16	1 1/32	1 1/8
I	5/32	7/64	1/8	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	1 3/4	1 1/2	1 3/4	1 1/2	1 1/4
K	1/16	1/16	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32	3/32
d	1/16	1/16	3/32	3/32	3/32	1/8	1/8	1/8	1/8	1/8	1/8	1 1/64	1 1/64	1 1/64	1 1/64

Dimensions. All dimensions in inches.

Finish. All heads and nuts to be semi-finish.

Material. For all screws and nuts—steel.

Screws are to be left soft. Screw heads are to be left soft. The plain nuts are to be left soft. The Castle nuts are to be case-hardened.

LARGE DIAMETER THREAD (S. A. E. Standard)

Diameter, Inches	PITCH		Diameter, Inches	PITCH	
	Coarse	Fine		Coarse	Fine
$1\frac{5}{8}$	12	16	$3\frac{7}{8}$	10	16
$1\frac{3}{4}$	12	16	4	10	16
$1\frac{7}{8}$	12	16	$4\frac{1}{8}$	10	16
2	12	16	$4\frac{1}{4}$	10	16
$2\frac{1}{8}$	12	16	$4\frac{3}{8}$	10	16
$2\frac{1}{4}$	12	16	$4\frac{1}{2}$	10	16
$2\frac{3}{8}$	12	16	$4\frac{5}{8}$	10	16
$2\frac{1}{2}$	12	16	$4\frac{3}{4}$	10	16
$2\frac{7}{8}$	12	16	$4\frac{7}{8}$	10	16
$2\frac{3}{4}$	12	16	5	10	16
$2\frac{7}{8}$	12	16	$5\frac{1}{8}$	10	16
3	10	16	$5\frac{1}{4}$	10	16
$3\frac{1}{8}$	10	16	$5\frac{3}{8}$	10	16
$3\frac{1}{4}$	10	16	$5\frac{1}{2}$	10	16
$3\frac{3}{8}$	10	16	$5\frac{5}{8}$	10	16
$3\frac{1}{2}$	10	16	$5\frac{3}{4}$	10	16
$3\frac{5}{8}$	10	16	$5\frac{7}{8}$	10	16
$3\frac{3}{4}$	10	16	6 & over	8	16

All threads to be U. S. S. form.

Useful Functions of π The numerical values of the most frequently occurring combinations of π are given in the following table:

$\pi = 3.14159265$	$\frac{\pi}{7} = 0.44879895$	$\pi^2 = 9.86960440$	$\sqrt{\pi} = 1.77245385$
$\frac{\pi}{2} = 1.57079633$	$\frac{\pi}{16} = 0.19634954$	$\pi^3 = 31.00627668$	$^3\sqrt{\pi} = 1.46459189$
$\frac{\pi}{3} = 1.04719755$	$\frac{\pi}{24} = 0.13089969$	$\frac{1}{\pi} = 0.31830989$	$\frac{1}{\sqrt{\pi}} = 0.56418958$
$\frac{\pi}{4} = 0.78539816$	$\frac{\pi}{32} = 0.09817477$	$\frac{1}{\pi^2} = 0.10132118$	$\frac{1}{^3\sqrt{\pi}} = 0.68278406$
$\frac{\pi}{6} = 0.52359878$	$\frac{\pi}{180} = 0.01754329$	$\frac{1}{\pi^3} = 0.03225153$	$\text{Log } \pi = 0.49714987$

Gasoline of 64° Beaumé has a specific gravity of .72, and consequently weighs 5.96 pounds per gallon.

A British Thermal Unit represents the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit at or near 39° F. Its symbol is B. T. U. There are 778 foot-pounds in a B. T. U. and 42.4 B. T. U. to a horsepower.

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NATIONAL AUTOMOBILE AND ALLIED ORGANIZATIONS

National Automobile Chamber of Commerce, Inc.

366 Madison Ave., at 46th St., New York, N. Y.

Objects: To foster the interests of those engaged in the trade or business of manufacturing automobiles and all other self-propelling vehicles.

To reform abuses relative thereto.

To secure freedom of its members from unjust or unlawful exactions.

To diffuse accurate and reliable information as to the standing of merchants and others dealing with members as to all inventions, patents, processes or devices designed or intended for use in, upon, or in connection with such vehicles and the manufacture thereof, as to the state of the art relative thereto, and as to the condition and development of the trade in which the members are engaged, in the United States and foreign countries.

To procure uniformity and certainty in the customs and usages of such trade.

To promote the construction of better highways.

To advocate the enactment of just and equitable laws affecting members.

To settle differences between members.

To promote a more enlarged and friendly intercourse among business men engaged in such trade or dealing with persons engaged therein.

To acquire by grant, gift, purchase, devise or bequest, to hold and to dispose of such property as the purposes of the corporation shall require, subject to such limitations as may be prescribed by law, including inventions, letters patent and processes, or rights thereunder, for the benefit of its members and not for pecuniary profit.

Officers

President, Charles Clifton

Vice-President, R. D. Chapin

Second Vice-Presidents: C. C. Hanch,
Gasoline Passenger Car Division; Wind-
sor T. White, Commercial Vehicle Divi-
sion.

Secretary, A. J. Brosseau.

Treasurer, H. H. Rice.

General Manager, Alfred Reeves.

Show Manager, S. A. Miles

Society of Automotive Engineers, Inc.

29 W. 39th St., New York, N. Y.

Object: To promote the arts and sciences connected with engineering and mechanical construction of automotive apparatus.

Officers

President, David Beecroft

First Vice-President, H. L. Horning

Second Vice-President, B. B. Bachman

Second Vice-President, E. A. Johnston

Second Vice-President, H. M. Crane

Second Vice-President, Jos. Van Blerck

Second Vice-President, T. C. Menges

Treasurer, C. B. Whittelsey

Secretary and General Manager, Coker F. Clarkson

Automotive Equipment Association

1813-1818 City Hall Square Bldg., Chicago, Ill.

William M. Webster, Commissioner

President, R. A. Stranahan, Ohio

Vice-President, H. M. Dine, Ohio

Chairman of the Board of Directors, J. Ernest Millen, Montreal, Canada

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The Motor and Accessory Manufacturers Association

33 West 42d St., New York, N. Y.

Objects: To promote in all lawful ways the interests of makers of motors, motor parts, and accessories.
 To aid in the protection of its members.
 To secure the advantages to be obtained by mutual co-operation.
 To safeguard the interests of its members whenever possible and to diffuse information concerning trade credits, and other matters of interest to the members of the Association.
 To co-operate with similar associations in other states.

Officers

President, E. H. Broadwell
 First Vice-President, W. O. Rutherford
 Second Vice-President, A. W. Copeland
 Third Vice-President, H. L. Horning

Treasurer, L. M. Wainwright
 Secretary and Asst. Treasurer, G. Brewer
 Griffin
 General Manager, M. L. Heminway

American Automobile Association

501 Fifth Ave., New York, N. Y.; 1108 16th St., N. W., Washington, D. C.

Objects: To unite in one body all the automobile associations and individual motorists of the country; to secure reasonable and just legislation.
 To aid in proper enforcement of automobile laws and ordinances; to advocate and obtain local, State and Federal aid in the construction and maintenance of good roads.
 To encourage touring, and to secure, prepare, and disseminate information relative thereto; and
 To support sportsmanlike contests and other movements that will advance motoring interests.

Officers

President, George C. Diehl
 Vice-Presidents:

Ralph W. Smith
 P. J. Walker
 H. J. Clarke
 Walter D. Meals

Clifford Ireland
 A. L. Terategger
 C. H. Verschoyke
 Preston Belvin

Treasurer, H. A. Bonnell
 Secretary, Arthur Fifoot

Chairmen of Boards:

H. G. Shirley, Good Roads.
 Richard Kennerdell, Contest Board.
 Percy E. Towne, Legislative Board.
 D. L. Morgan, Executive Board.
 Thos. P. Henry, Touring Board.

The Rubber Association of America, Inc.

52 Vanderbilt Avenue, New York, N. Y.

Objects: To promote in all lawful ways the commercial interests of its members and to secure the advantages to be obtained by mutual co-operation.
 To acquire and disseminate information concerning trade conditions at home and abroad, credits and other matters of interest.
 To stimulate social intercourse among those connected with the rubber industry and commerce.
 In general to promote the welfare of the rubber industry.

Officers

President, Harry T. Dunn
 First Vice-President, Frank A. Seiberling

Second Vice-President, Horace De Lissier

General Manager and Secretary, A. L. Viles
 Treasurer, Wm. C. Cox

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Motor Truck Association of America, Inc.

1819 Broadway, New York, N. Y.

Objects: To encourage the efficient use of auto trucks and protect users against unjust taxes or unreasonable restrictions of any character

To serve as a basis for a strong national organization of those interested in the commercial use of motor trucks and within our present membership district.

Officers

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Vice-Presidents—Hermann Irion
Charles M. Geiger

John W. Wierk
Secretary, C. O. Kramer
Treasurer, Nat Mallouf

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General Manager, T. D. Pratt
Counsel, Coulter & Bond

Manufacturers Aircraft Association, Inc.

501 Fifth Ave., New York, N. Y.

President, J. K. Robinson, Jr.
Vice-President, G. M. Williams

Secretary, F. H. Russell
Treasurer, F. B. Rentschler
General Manager and Assistant Treasurer, Samuel S. Bradley

National Automobile Dealers Association

320 N. Grand Ave., St. Louis, Mo.

President, Jesse A. Smith, Milwaukee, Wis.

First Vice-President, William L. Hughson, San Francisco, Cal.

Second Vice-President, W. J. Brace, Kansas City, Mo.

Treasurer, F. W. A. Vesper, St. Louis, Mo.

General Manager, Harry G. Mooock, St. Louis, Mo.

General Counsel, C. A. Vane, St. Louis, Mo.

Trailer Manufacturers Association of America

Grand Central Palace, New York City

Objects—To promote the trailer industry; encourage introduction and use of trailers and their accessories; further construction and maintenance of good roads; aid in securing enactment of uniform laws relating to use of trailers; and to gather and disseminate information regarding the trailer industry, the use of trailers, the construction of roads and the enactment of uniform laws.

Officers

President, J. H. Fertig, Newark, N. Y.
1st Vice-President, H. C. Fruehauf, Detroit, Mich.
2d Vice-President, Max Herrmann, Beloit, Wis.
Secretary-Treasurer, Henry M. Wood, Cincinnati, Ohio
General Manager, L. G. Meldram, New York City

Executive Committee

J. H. Fertig, Newark, N. Y.
H. C. Fruehauf, Detroit, Mich.
Max Herrmann, Beloit, Wis.
Harry M. Wood, Cincinnati, Ohio
W. E. Ferris, Cleveland, Ohio
S. A. Griggs, Detroit, Mich.
Ike S. Byrum, Troy, Ohio

Rich Tool Company

Railway Exchange Bldg., Chicago, Ill.

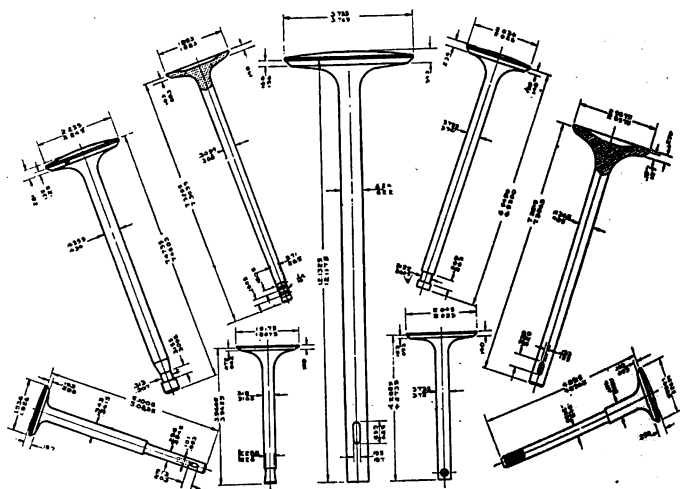
Kresge Building, Detroit, Mich.

The cuts below represent valves used in some of the best known present day Aero-plane, Motor-Boat and Racing Automobile Engines. They are all products of this Company and most of them have been produced in large quantities and have, therefore, been thoroughly tested in service.

Needless to say, they are all Tungsten Steel, but we also make one-piece forged valves of all other commonly used Alloy Steels in the manufacture of which we exercise the same care as is used in our Tungsten Valve materials.

One of the newer types of valves which we have been making in very large quantities for the past two years is our Hi-Chromium Valve, which has some very remarkable properties. It is for some purposes an excellent valve and we solicit inquiries from those who are troubled by a persistent burning away of the seats of the valves in their motors.

We also have a material called Cobalt-Chrom that possesses the qualities of High-Chromium as relates to resistance to burning, together with a resistance to abrasion or wear and a strength when red hot more nearly comparable to that of High-Tungsten. This material offers excellent promise of good results in engines running for long periods under heavy load without attention, such as marine motors and tractor motors.



Our Engineering Department is at your service on all questions concerning suitability of material and design.

Please mention The Automobile Trade Directory



WHEREVER this sign is displayed you can get or have installed Wire Wheels for practically every make of car. There, also, you will find a complete Wire Wheel equipment ready to take care of servicing, do re-enameling, etc.

WIRE WHEEL CORPORATION OF AMERICA
(Successors to Houk Manufacturing Co.)
1700 Elmwood Ave. Buffalo, N. Y.

Direct Factory Branches and Service Stations:

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Canadian Factory: Ajax Wire Wheel, Ltd.,
64 Niagara Street, St. Catharines, Ont.

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Pittsburgh—	Miller & Woodward, Inc., 3751 Bigelow Bldg.
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A set of Houk or House wire wheels consists of five wheels, four inner hubs, four hub caps, hub cap wrench and spoke nipple wrench.

HOUK
QUICK CHANGE

For over 600 models of 150 makes of cars. Specify make, model and year of car when writing for particulars.

HOUSE
QUICK CHANGE

For FORD, CHEVROLET 490 and OVERLAND Model 4. Finished in White, Black, Red and Cream—color optional.

WIRE WHEELS

Five Wheels, triple spoke, Detachable at hub

DUFF GENUINE BARRETT JACKS

A Moderate-Priced Automobile Jack

This jack meets, at a very moderate price, all requirements as to lifting capacity and different axle heights of the great majority of passenger cars and light commercial motor vehicles. The footlift is of the quickly adjustable, sliding type, instantly set at any height on the rack to fit under car axle, and reserving the entire "raise" of the lifting rack for actual lifting of the car above the ground. Jack is guaranteed to lift 2000 lbs. on the head and 1000 lbs. on the footlift. Furnished with 18-in. folding steel handle. Individually packed in substantial cartons of attractive appearance.



Jack No.	Capacity	Height Inches	Raise Inches	Foot Lift Adjustment		Shipping Weight	List Price
				Lowest	Highest		
08	1 ton	11 $\frac{3}{4}$	6 $\frac{1}{2}$	4 in.	10 $\frac{1}{2}$ in.	11 lbs.	\$5.50

"The Aristocrat of Auto Jacks"

An easily operated jack for lifting the heaviest passenger cars. Operating handle is twice as long as the ordinary jack handle. The long handle easily clears all obstructions at either the front or rear of the car, and may be used to place the jack in position or remove it. When not in use, the handle uncouples to half its length, easily fitting into the smallest tool box. By means of an adjustable foot lift, the jack can be made instantly to fit under the lower axle of any car. The range of adjustment is wide enough to handle any car in any position. Packed in individual cartons.



Jack No.	Capacity in tons	Height Inches	Raise Inches	Foot Lift Adjustment		Shipping Weight	List Price
				Lowest	Highest		
411	1 $\frac{1}{2}$	11	7	4 in.	10 in.	20 lbs.	\$10.00

Sturdy Motor Truck Jacks

The leverage in these jacks is so compounded by gears that the load is lifted with only one-third the effort required with a direct leverage jack. Furnished as standard equipment by many of the leading truck manufacturers. Recommended for constant service in garages where a heavily built jack is needed to stand the heavy wear to which a garage jack is subjected. Each jack is tested before shipment.

Jack No.	Capacity Tons	Height Inches	Raise Inches	Shipping Weight	List Price
100	3	10 $\frac{3}{4}$	5 $\frac{1}{4}$	16 lbs.	\$ 8.00
200	5	13	6 $\frac{3}{4}$	28 lbs.	11.00
207	5	12 $\frac{1}{2}$	5 $\frac{1}{2}$	22 lbs.	On Application
205	10	16	5 $\frac{3}{4}$	43 lbs.	



THE DUFF MANUFACTURING CO.

General Offices and Works—PITTSBURGH

50 Church St.
NEW YORK, N. Y.

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CHICAGO, ILL.
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Candler Bldg.
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Railway Exch. Bldg.
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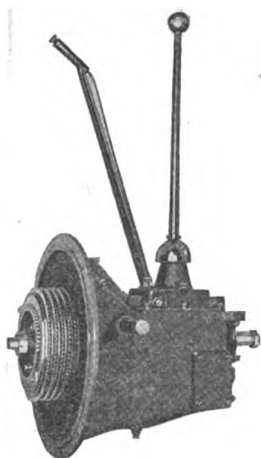
Gears For Those Who "Treat 'Em Rough"

Under skilled, careful manipulation, almost any transmission of standard design will give reasonably satisfactory service.

But many motorists—and many truck drivers—are neither skilled nor careful in gear manipulation.

For that kind, you need gears that simply can't be stripped—Covert Gears, in Covert Transmissions—the highest quality equipment there is on the market but the biggest value, nevertheless.

Manufacturers of Trucks, Tractors and Passenger Cars who are anxious to reduce all owner risk to the lowest possible point, provide complete Covert installation of Transmission, Clutch and Control.



MODEL "MUC"

Built especially for trucks of the "Speed Wagon" type. Used by truck holding world's record under load—935 miles in 24 hours. Weight, 168 pounds.

COVERT GEAR COMPANY, Inc.

Sales, Engineering and Factory: Lockport, N. Y.
Export Offices: 100 Broad Street, New York City



TRADE MARK REGISTERED

TERNSTEDT

Automobile Body Hardware

... BUILT - BETTER - FOR - BETTER - BODIES ...

<i>Window Regulators</i>	<i>Curtain Rollers</i>	<i>Sunshades</i>
<i>Door Panels</i>	<i>Door Bumpers</i>	
<i>Anti-rattlers</i>	<i>Windshield Wipers</i>	
<i>Windshields</i>	<i>Window Sash</i>	<i>Strap Hinges</i>
<i>Concealed Hinges</i>	<i>Piano Hinges</i>	
<i>Rear Deck Locks</i>	<i>Rear Deck Hinges</i>	
<i>Rear Deck Lid Braces</i>	<i>Screw Machine Products</i>	
<i>Channel and Shapes</i>	<i>Die-Castings</i>	
<i>Open and Closed Body Door Locks</i>		
<i>Other Miscellaneous Automobile Hardware</i>		
<i>All Kinds of Stampings</i>		

IN purchasing Ternstedt Automobile Body Hardware you have a positive assurance that each piece of Ternstedt Equipment will do its work thoroughly and stand up under any demand of service. Because of its inherent worth and other advantageous reasons, many of the leading motor car manufacturers and body builders are specifying Ternstedt Hardware exclusively. Samples of any or all of the products in the greatly augmented Ternstedt line will be gladly sent to you at your request.

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CITY, 1912

Bullers Sunshades

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Shield Wipers

Strap Hinges

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Deck Hinges

Machine Products

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TRADE MARK REGISTERED

TERNSTEDT

Automobile Body Hardware

... BUILT BETTER FOR BETTER BODIES ...

<i>Window Regulators</i>	<i>Curtain Rollers</i>	<i>Sunshades</i>
<i>Door Panels</i>	<i>Door Bumpers</i>	
<i>Anti-rattlers</i>	<i>Windshield Wipers</i>	
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<i>Concealed Hinges</i>	<i>Piano Hinges</i>	
<i>Rear Deck Locks</i>	<i>Rear Deck Hinges</i>	
<i>Rear Deck Lid Braces</i>	<i>Screw Machine Products</i>	
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